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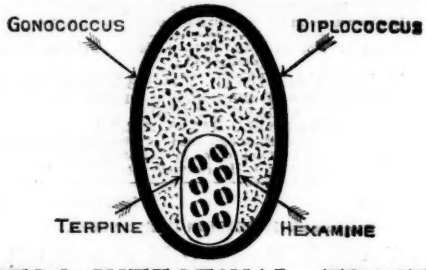

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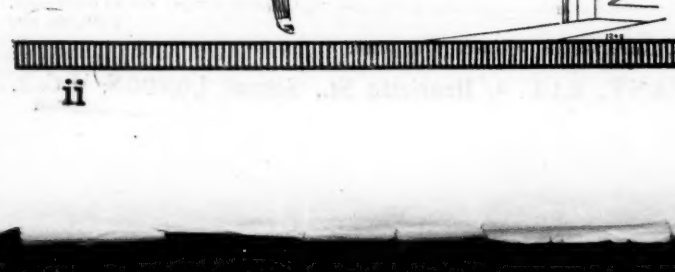

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Horace Dobell Lecture

ON AN EXPERIMENTAL INVESTIGATION OF

SPIROCHÆTA DUTTONI,

THE PARASITE OF TICK FEVER.

Delivered before the Royal College of Physicians of London on Nov. 2nd, 1920,

BY MAJ.-GEN. SIR WILLIAM B. LEISHMAN, K.C.M.G., C.B., M.B., F.R.C.P., F.R.F.P.S., LL.D., F.R.S., K.H.P.,

DIRECTOR OF PATHOLOGY, ARMY MEDICAL DEPARTMENT.

IT is my first and a very pleasant duty to thank you most sincerely for the high honour you have paid me in inviting me to deliver the Horace Dobell lecture, and I am further deeply in the debt of the Royal College for their courtesy in permitting me to postpone its delivery on several occasions since the date originally fixed in 1914. Not only has an interval of years elapsed since I carried out most of the experimental work which I shall describe, but I have been unfortunate enough to lose some of my records and sketches, which disappeared during the period of great stress under which the great work of the Vaccine Department of the Royal Army Medical College was carried on. Enough, however, remains to enable me to put before you some hitherto unpublished observations, many of them verified by my re-examination of microscopic specimens, while I am also glad of the opportunity of revising my work as a whole in the light of much that has recently been done and written on the same subject, or on others with which it stands in intimate relation.

The subject of the pathogenic spirochætes is one in which I have always taken a deep interest, and during the last 15 years I have devoted a large part of my free time to their observation. Those with which I have worked, at one time or another, have been *Treponema pallidum* and the spirochætes associated with yaws, Vincent's angina phagedænic tropical ulcer, and those responsible for the different varieties of relapsing fever. The largest part of this work has been devoted to the last-named group of organisms, and in particular to the African variety—tick fever—caused by the *Spirochæta duttoni*, and I have on several occasions published the results obtained at various stages of my inquiries. The subject has expanded so enormously of late years, and touches, or is touched, on so many sides by researches on other spirochætal infections that it must be my endeavour to speak as generally as may be and to introduce detail only where this is called for in illustration or support of some essential point. Anything of the nature of a historical account of the experimental investigation of tick fever and of its cause, the *Spirochæta duttoni*, would be quite impossible within my limits of time, and for the same reason I must touch but lightly on the valuable work of many observers in many lands, even when this work appears to call for detailed comment on account of its criticism of some of my own. I trust this may be borne in mind if I appear not to do full justice to the observations of any particular worker.

I propose to deal with my subject on the following lines: first, with a condensed account of some of my earlier work; secondly, with work which has either not been published or only briefly mentioned; thirdly, with the work of others on the same or closely related branches of inquiry which appears to have a bearing upon the life-history of *Sp. duttoni*.

EARLY WORK.

Differentiation and Cultivation.

Some of my earliest work on the subject was a study of the morphology of the spirochætes of the different relapsing fevers, and an investigation of the differentiation of the European form, due to *Spirochæta recurrentis*, from the African form, due to *Spirochæta duttoni*.

I studied these two spirochætes from material obtained from Fraenkel and kept alive by passage through mice. Both their animal reactions and morphology were compared and contrasted with the experience recorded by others. I need say no more on this point than that the impression I then formed has been strengthened by my later experience. This was that it is a very difficult if not impossible task to differentiate these spirochætes by any morphological characteristics owing to the great variety of forms and size which one encounters in specimens taken at various stages of an attack and by varying the method of collection, fixation, and staining. Almost all of the points usually quoted as distinctive of one or other species I have encountered within a single species by varying the conditions just mentioned. I would speak almost as strongly with regard to differences founded on the animal reactions of the strains. These I have found, in the case of the strains with which I have worked, to be very inconstant; and although, personally, I have done but little in the way of the cross-immunisation of laboratory animals I am not inclined to attach great importance to these in view of the individual differences I have encountered in the degree of immunity conferred on monkeys and mice infected in my experiments with *Sp. duttoni*. The uncertain factors of dosage and the individual resistance of the animal must, I think, count largely in the results of such cross-immunity experiments.

The same remarks apply to the other strains of relapsing fever, which have from time to time been described, and it cannot at present be asserted with any degree of confidence how many varieties there are of either the African, the European, the Indian, or the American forms. All that I think it is possible to say at present is that the human relapsing fevers are all due to spirochætes which cannot with certainty be distinguished one from the other by morphology or by animal reactions, and that they probably owe such differences as we find in them to the influences of locality and to differences in their arthropod vectors. In this I agree with the views expressed by Fantham.

A Phenomenon of Aggregated Spirochætes.

I need perhaps hardly say that I, like most other workers on these elusive organisms, have spent much time on attempts at artificial cultivation of the spirochætes. I have not met with anything that I can regard as a success, although on one occasion I was able to maintain the organisms alive and motile, as well as of proved virulence, for a period of 51 days by employing as a medium a mixture of nutrient agar and a broth prepared from the bodies of medicinal leeches.

My observations of the prolonged vitality of the spirochætes in these animals and the interesting changes which they underwent in them was my reason for employing this unusual material of culture. Still, successful transplantation from tube to tube failed here, as always in my hands. At the same time I should like to put on record that I have once observed in vitro in one of my cultivation experiments, conducted with citrated mouse blood maintained at a low temperature, a phenomenon which has left me with a very strong hope that truly successful cultures of these organisms may yet be attained. In this specimen I observed not only an undoubted and great multiplication—that has been often noted—but the living and intensely motile spirochætes had aggregated themselves into most beautiful rosettes, precisely similar to those with which we are familiar in cultures of trypanosomes and leishmania. The perfectly regular radiate arrangement of these rosettes and intense rotatory movements of the individuals comprising them excluded any possibility of the arrangement being one of chance or degeneration.

History of Tick-ingested Spirochætes.

My experiments were, however, in the main directed towards the fate of spirochætes ingested by the tick, the mode of infection by tick-bite, and the manner in which hereditary transmission of the organisms takes place in the tick. At the time I commenced there appeared to be little doubt upon many of these points since the work of Dutton and Todd and others of the earlier investigators, and, later, that of Koch, appeared to make of it a simple and obvious story.

Koch, for example, had traced the spirochætes from their passage through the walls of the tick's gut into the body cavity and organs of the tick and found them in large numbers in the ovarian tissue; there they penetrated into the young ova, where they could often be seen in numbers. They increased rapidly as the development of the larva and nymph proceeded, until, as he said, they were eventually masked by the growth of the tissues of the young tick.

Without in any way questioning the accuracy of these observations I was for a long time unable personally to

confirm them. After several failures to secure infection from the earliest batches of ticks sent to me by brother officers from Africa, I attributed this simply to the ticks not being infected, and was confirmed in this by my complete failure to detect spirochætes in any of them. When finally I did receive a batch whose bites infected a monkey I was, however, surprised to find that here, too, I could find no spirochætes in any of the ticks of the batch which I dissected. It was, of course, possible that infectivity was limited to one or two of these ticks, and that those I selected for investigation were uninfected.

However, as my experiments progressed with the known infected ticks, with which I was then able to provide myself by feeding them on animals suffering from relapsing fever, I still found it extremely hard to find any trace of spirochætes in the body of a tick fed on heavily infected blood later than the tenth day after the feed. Similarly laborious searches in hundreds of eggs laid by heavily infected ticks, or dissected out of their ovaries, were also completely negative, and although in a subsequent communication I was able to record that spirochætes had eventually been found in three eggs, these were eggs of ticks which had been kept at comparatively high temperatures, and even under these conditions a visible infection of the egg with spirochætes was an extremely rare phenomenon.

While these experiments were in progress I had been struck by the frequent occurrence in various parts of the body of the ticks of curious little clumps of granules, staining deeply with the reaction of chromatin, and highly refractile. The individual granules were usually rod-shaped and resembled minute bacteria, often with a diphtheroid-like beading or segmentation; at other times they were spherical or oval. By appropriate staining or illumination it was often possible to demonstrate that individual clumps of granules were contained in a definite and approximately circular matrix, usually unstainable, but sometimes very faintly tinged with blue by my stain. These granules were extremely irregular, both in their numbers and their distribution in different ticks, the commonest site being within the cells lining the malpighian tubules and in the ovarian tissue. I shall not spend longer on their description, since their appearance and distribution have been recounted in my earlier communications, and they are familiar to others who have worked on the same subject. They are also fairly well demonstrated in the micro-photographs which are shown.

From the first I suspected these granules of being parasitic, and of having some connexion with the spirochætes, so naturally my inquiries thenceforth were very largely connected with attempts to determine whether or no this was the case. Like most of those who have worked with this organism, I was interested in the curious changes which the spirochætes ingested by the tick undergo in the stomach of that animal. These have been described and figured by many besides myself, and the segmentation of the chromatin core of the spirochæte, as well as the appearance of lateral or terminal buds, are well known. These changes you may follow in the sketches which I have made from *Sp. duttoni* and other spirochætes. I had myself before this made a close study of these changes in spirochæte blood kept under various conditions in vitro, and had gained a very strong impression that they were not degenerative, as they were usually held to be, but must serve some purpose in the life-history of the organism.

Bearing this in mind, I was impressed by the frequency with which identical changes were encountered in the spirochætes ingested by the tick when the gut contents were examined from day to day. Further than this, I remarked in many ticks that the almost complete disappearance of the spirochætes from the stomach of the tick often coincided with the appearance in that situation of great numbers of short rods or granules giving the chromatin reaction. Their resemblance to bacteria was considerable, but all attempts at cultivation failed, and I came to the conclusion that they were the segments of the chromatin of the ingested spirochætes which had either been extruded by them when living or set free by their death. Careful dissections of ticks made with a view to study this point showed that in many cases, if not in all, there followed some days after the ingestion of heavily infected spirochæte blood a great increase of the granule clumps in the body of the tick, chiefly in the malpighian tubules and the genital tissues.

Difficulties Encountered during Investigation.

In connexion with this observation, and also in respect of the greater part of these investigations, I would lay stress on an unavoidable limitation of one's work on ticks, which has the uncomfortable result of substituting conjecture for the certainty for which one might hope as a result of the painstaking and thorough investigation of a given point.

Owing to their structure and nature it is only possible to determine the presence or absence of anything for which one may be in search by sacrificing the tick and examining all the organs, tissues, and fluids; this search cannot, therefore, be made on the same tick from day to day. Some have attempted to get over this by snipping off a leg—by which one obtains a sample of the cœlomic fluid—or by incising the dorsal chitin and cutting off or aspirating the contents of one of the prolapsed gastric diverticula; but such procedures appear to me very unsatisfactory, especially when negative results are recorded, in view of the extreme irregularity of distribution of both the spirochætes and of the bodies which may conceivably be derived from them. In consequence, one has had to employ the only alternative—to deal with one's nymphs or adults in batches which are fed at the same time and submitted to identical experimental conditions, and then to dissect one or more daily, trusting that the picture presented by the individual may be representative of that in the other members of the batch. I may perhaps be pardoned also if I remind you of the labour necessary to carry through such an experiment as the daily investigation of members of two or three batches of ticks submitted, for example, to different grades of temperature before or after feeding. Their dissection, the preparation of specimens of the various organs and tissues, and the prolonged microscopic study of these make heavy demands, and yet it is work which is not worth the doing unless one is prepared to devote to it the time required. In illustration of this I may mention that I have on several occasions had to revise my conclusions on a particular experiment as a result of a second prolonged search through a series of films.

On the other hand, I may claim that in most instances, indeed in all of the more important ones, I have repeated the particular experiment several times, the results thus controlling one another and safeguarding one from the drawing of hasty conclusions.

Mode of Infection.

Early in my work I was able to show that the probable mode of infection in tick fever was not, as had been usually assumed, through the inoculation of the spirochætes from the salivary secretions through the biting parts of the tick's mouth but through the penetration of the infected secretions, passed by the tick while gorging, into the wound caused by the bite. One of these secretions, the coxal fluid, had, I found, pronounced anticoagulating power, and this facilitates the entrance of the virus if it should be present, as is undoubtedly the case at times, either in it or in the other fluid voided by the tick, the white secretion of the malpighian tubules.

This was demonstrated by an interrupted feeding experiment, in which a number of ticks were allowed to bite a monkey and after they had fed for some minutes, but passed no secretions, they were gently removed and placed on a second monkey, on which they finished their meal and passed freely their secretions. The first monkey was not infected, but the second contracted a severe and typical attack, while a mouse inoculated with some of the voided secretion also contracted the fever. This experiment has since been repeated by several other workers who have confirmed my result. At the same time another attempt of my own to repeat it failed, inasmuch as neither monkey was infected, nor was the mouse inoculated with the secretion, and this in spite of the fact that a spirochæte was found on searching the centrifuged secretions used for the inoculation of the mouse.

I do not question that at times infection may occur through the bite alone of the tick; indeed, I have myself found spirochætes in the salivary gland, though only on one occasion. The granule clumps also are occasionally seen in the salivary cells, though neither as frequently nor in as great numbers as in other situations. Such a mode of transmission is, I fancy, less common in the actual infection of man than the entrance of the virus held in the secretions through the wound caused by the bite.

I have found that infection is by no means a certainty even when spirochætes are subsequently found in numbers in the tick which was employed, and, conversely, I have on very many occasions, I believe the majority, found no trace of a recognisable spirochæte in the ticks concerned when a successful infection has followed on the bite of individuals which I had myself infected at various periods by allowing them to gorge on infected mice or monkeys.

Influence of Temperature.

These irregular results were the rule and not the exception in the case of ticks maintained at a moderate temperature, not exceeding 25° C., but different results were obtained when they were kept at higher temperatures, either for a few days or for more prolonged periods.

I varied the conditions here on the assumption that one might be more likely to reproduce the results obtained by Koch and others, who worked in the endemic zone of tick fever, by approximating to the conditions of temperature there obtaining. A very large series of experiments were done to determine the influence of higher temperatures both on the infectivity of the ticks and on the spirochætes which they had been allowed to ingest. One was encouraged to proceed with these by finding, as one soon did find, that the ingested spirochætes behaved in an unexpected and very suggestive manner when the ticks were kept at temperatures ranging from 25° to 37° C. These changes were of two kinds, and to each of them I attach considerable importance.

First, the granule clumps I have described as being commonly encountered throughout all stages of the tick's life, from the intra-ovarian egg onwards, showed very often, under the influence of warmer surroundings, a very definite change of shape; from being mostly small rods or ovoids, as I have described, increasing numbers of them were found to have assumed a circular or coccoid form. They appeared to me also to have increased in numbers, but on this point it was not possible to be certain for the reasons I have already given. In the case of some of these granules I think this change was preliminary to their subsequent development into what I may speak of as "young spirochætes." I was never successful in observing the development of these young spirochætes from granules in ticks prior to their having been fed on spirochæte blood in the laboratory; but in ticks which were placed at the higher temperatures subsequent to a feed on infected blood the same changes were found in the granules, and in this case, as I shall recount later, I have seen such development.

Secondly, a very remarkable difference was found on following from day to day the fate of ingested spirochætes in the bodies of ticks fed at the same time on the same animal but subsequently divided into two or three lots, which were kept at different temperatures. Five of these experiments were carried through, involving many months of laborious work, and the results were of sufficient regularity to allow of the following general description.

At temperatures below 25° C. the spirochætes maintain their motility, characteristic shape, and staining reactions for three or four days; after this they rapidly become motionless, distorted in shape, tend to aggregate in tangles, and show very irregular staining. In the days following these changes become more pronounced, and it is increasingly difficult to find an unaltered spirochæte, until, on or about the tenth day after the feed, they are found to have disappeared entirely from the gut. I mentioned earlier the liberation of the segments or granules of chromatin from the altered spirochætes and the synchronous apparent increase in the number of the granules encountered in the Malpighian tubules, the generative organs, and elsewhere. No further changes were observed, though individual ticks of the batch were dissected and examined, sometimes months after the termination of the experiment. At the same time it is never safe to assert, at least, in my opinion, that a given tick which has once been fed on infected blood, or has been born from an infected mother, and possibly also the descendant of an infected grandmother, is free from infectivity, for I have now and then encountered an odd spirochæte or possibly a small tangle of them in some situation when prolonged search of the specimens from this tick and from others belonging to the same batch had, up to that time, been completely negative.

Turning now to ticks kept after feeding at temperatures above 25° C. Here it was found that comparatively little change occurred in the spirochætes during the first two or three days after the meal; thereafter they underwent the same changes as have been described for the ticks kept at the low temperatures, but apparently with greater intensity and greater rapidity. By the eighth to the tenth day after the meal active unaltered spirochætes had either vanished completely from the tick's body or were extremely hard to find. But—and this is the interesting point—at or about this same period there was a sudden reappearance of spirochætes in various tissues, but spirochætes of an altogether different type—small, delicate, faintly staining, and less regularly curved than those found in the blood. When first seen they were usually present in enormous numbers and showed no increase in the days following, rather a slow decline. It gave a strong impression of a simultaneous development or origin rather than of a rapid process of multiplication from a few individuals. They were found mostly in two situations: in the walls, not the lumen, of the receptaculum of the stomach and of its diverticula, and in the cells lining the Malpighian tubules. When liberated from these situations by teasing or crushing, and kept in a suitable medium, they showed active motility. They varied in length from individuals the size of a cholera vibrio to others almost as long as the blood forms. These "young spirochætes," once they had made their appearance, tended to persist in the ticks, and in most of the experiments in question I was still able to find them, often in great numbers, many months after the tick had been removed to the cool incubator.

Another interesting point which was noticed in several of these experiments was that the young spirochætes appeared in successive waves at intervals, roughly, of 7–10 days, as long as the ticks were kept at the higher temperature. The suggestive bearing of this observation upon the successive crops of organisms which synchronise with the febrile relapses in man and animals will be obvious.

Diminution and Reappearance.

Although the subject is one which does not lend itself easily to illustration by graphic methods, I have endeavoured in the charts (Figs. 1 and 2) to show the course of events in several of these experiments as regards the number and character of the spirochætes encountered in the dissected ticks in the days following the infective feed and their being placed at the respective temperatures recorded. You will see that the charts bring out the following points.

FIG. 1.—*Ticks kept at Temperatures below 25° C.*

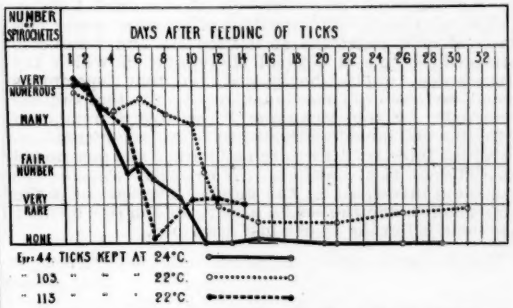
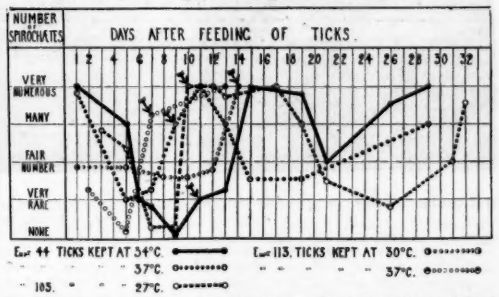

NUMBER OF SPIROCHÆTES
DAYS AFTER FEEDING OF TICKS
1 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
VERY NUMEROUS
MANY
FAIR NUMBER
VERY RARE
NONE
Exp. 44 TICKS KEPT AT 24°C.
" 103. " " " 22°C.
" 113 " " " 22°C

FIG. 2.—*Ticks kept at Temperatures above 25° C.*


NUMBER OF SPIROCHÆTES
DAYS AFTER FEEDING OF TICKS.
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
VERY NUMEROUS
MANY
FAIR NUMBER
VERY RARE
NONE
Exp. 44 TICKS KEPT AT 34°C.
" " " 37°C.
" 105. " " 27°C.
Exp. 113. TICKS KEPT AT 30°C.
" " " " 37°C.

In the three batches of ticks kept after infection at temperatures below 25° C., which may be considered as controls, the spirochætes diminished in numbers with great rapidity, and although a few odd ones were encountered up to the end of the period of examination they did not reappear in any numbers. On the other hand, in the five batches which were maintained at temperatures above 25° C. after the feed on spirochæte blood it will be seen that, following on the initial disappearance, there is a remarkable reappearance of the organisms, usually an abrupt change in which they increased from a few isolated specimens to great quantities, which in some cases largely exceeded the numbers found at the first examination. But the change is not limited to numbers; these are not the same kind of spirochæte, being almost wholly those small, fine, and irregularly curved forms which I have spoken of as "young spirochætes," and they are almost entirely confined to the tsssues and not at this stage free in the body fluids or the lumen of organs. The sites in which I have most frequently found them are in the walls of the gut, in the cells lining the Malpighian tubules, or between these cells and the delicate membrane which forms their external coat of the tubules, in the ovarian or testicular substance, and, finally, within the sarcolemma coating the striped muscle fibres. Naturally, in crushes of organs many escape and are found free, but I am convinced that they are formed within the tissues—probably from the granule clumps—and that it is only at a later stage and under certain conditions that they grow to full size, escape into the fluids of the body, and wander at their will. In order that you may follow the course of

events more clearly, I have, in Chart 2, indicated by arrows, the points at which these young spirochætes were first detected, and all readings later than that refer to this variety and take no account of the few fully developed forms encountered, which may either have persisted from the original infecting dose or have developed out of the younger forms.

MORE RECENT WORK.

This brings me up to the point of my more recent work, if one may so speak of pre-war labours, which now seem very far away. The observations of which I have hitherto spoken were almost entirely made upon specimens dried, fixed, and stained by my own method. Staining was always carried to a maximum degree of intensity, and the film subsequently cleared of every trace of deposit by weak alcohol or by acetone. Examinations as to motility were made from time to time in moist specimens, but were not employed as a routine measure for the detection or enumeration of the spirochætes.

Dark-ground Method.

The great advantages of the dark-ground method had in the meantime come into prominence, and I determined to repeat certain portions of my work, using this method of illumination as my routine, and I had constructed for me a special thermostat in which my microscope might be placed, so that specimens could be observed continuously at any temperature selected. By this technique I repeated a number of experiments, including those I have just commented on, in which infected ticks were maintained and contrasted at different temperatures. No essential change was made out in respect of the number fluctuations of the spirochætes, and the series investigated in this manner are included in the charts just described.

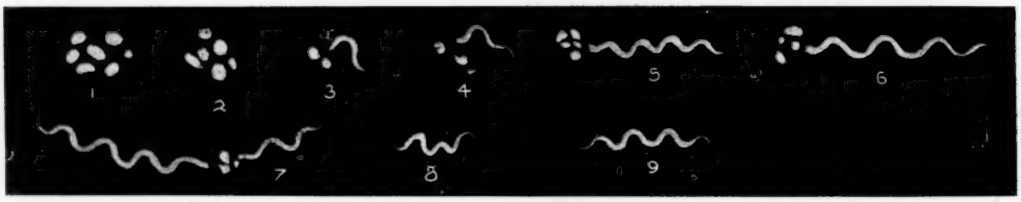
The technique, however, was more fruitful in other directions. Great attention was paid to the appearances of the spirochætes and of the granules under this method of demonstration, and the finer details of structure shown by staining were contrasted and correlated with the pictures shown on the dark ground. Much was learnt from this, and the combination of these two methods of study is a very helpful one, as each aids the other and confirms or corrects the impressions founded upon one alone. I have found that it is even possible to make good use of the dark-ground method on stained films. Any structure, the details of which have been studied in the stained film, may be clamped in position on the stage, and the other illuminating system substituted without disturbing it. It will be found that a very satisfactory dark-ground picture is obtained, the details of the refraction of the structure showing out as well as in a moist preparation, and being only slightly affected by the tinge of colour given by the stain. By employing this method it was possible, for instance, to clear up doubts which might exist as to a certain granule or other structure, the refractility being of great assistance in determining its true nature.

As regards the spirochætes themselves, I was chiefly interested in trying to make out some further details as to the characteristic formation of segments and granules from the homogeneous chromatin core contained within the periplast of the adult and unaltered parasite, and also to observe further the appearance and structure of the terminal or lateral buds. As I have already mentioned, I had seen these both in attempted cultures of *Sp. duttoni* and other spirochætes, and also in the body of the tick. The segments and grains into which the chromatin core divides are readily seen in living specimens thus illuminated, and the grains in particular are highly refractile. They are often observed in spirochætes which show at the time intense motility, and are thus clearly not a post-mortem change. As to the shedding of these granules, described by Fry, Balfour, and others, I could not personally confirm this, for although I have watched a granule vigorously coursing up and down a spirochæte as its rotation reversed, and then seen it apparently ejected into the surrounding fluid, I have also seen the same granule return, in all appearance, to the body of the spirochæte and resume its perigrinations. This I attributed to some foreign particle being caught in the vortex currents set up by the rotation of the spirochæte and being set free when these movements changed or ceased. But although I failed to convince myself of their extrusion in the case of the spirochætes which I kept under observation with this object, I believe that eventually they are extruded, either while it is still active or when it is quiescent and in appearance dead. It is difficult to know what appearance may be taken as indicating the death of a spirochæte; for instance, many have observed and described the empty sheaths which are often found in exhausted cultures and other situations; by this method of illumination these show a very pretty double outline in place of the even and homogeneous refraction of most of the active forms. But I have also seen such double-contoured forms in active movement. Again, spirochætes kept in vitro for many days at temperatures approaching the freezing-point may show no trace of motility on examination, but on placing them on the warm stage I have seen great numbers become once again actively motile.

Lateral or Terminal Buds and Granule Clumps.

The lateral or terminal buds, too, were closely examined. They contained one or more granules of chromatin, very highly refractile and variable in size and shape, embedded in a matrix which gave a faint milky radiance, like that of protoplasm, but somewhat more hyaline. At times the bud was seen to be pedunculated and attached merely by a very thin filament to the spirochæte. Spirochætes possessing such buds in all stages were often as active as those which had none, so this, too, is no evidence of a degenerative or post-mortem change. Detached buds were also seen on many occasions, and many of these could not be distinguished by either method of examination from some of the granule clumps found elsewhere in the tissues of the ticks. The sketches which I show you will save the need for further description. (Fig. 3.)

FIG. 3.—SPIROCHÆTA DUTTONI. *Sketches of Living Forms of Young Spirochætes observed on the Warm Stage by Dark-ground Illumination.*



1, 2, Granule clumps. 3, 4, Growth of young spirochætes from granule clump. 5, 6, Longer forms. 7, Growth from each side of clump. 8, 9, Young free spirochætes.

The granule clumps themselves were examined from many situations, and here the chief point made out was that the capsule or matrix, of which there was occasionally an indication in stained films, was more often observed, and the intensely refractile granules were seen to be embedded in a milky matrix of approximately circular and well defined outline.

Search was made by the same method for altered spirochætes or for granules in the bodies of infected mice at various periods during the first attack, the fever-free period, and at the beginning and end of a relapse. Much of interest was observed, too detailed to describe beyond saying that I found granule clumps in the spleen, particularly in the spleen at the beginning of a relapse, which appeared similar to those found in ticks. It is, however, impossible to assert that they were identical, since so many other granular bodies are found normally in the same situation. I also noted some very minute spirochætes in association with granules in this situation, similar to those found in heated ticks.

Observation of Circular Bodies in Spleen.

I refer, however, to those observations chiefly to record that it was here, in the spleen of an infected mouse at the commencement of the first attack, that I

encountered some curious bodies, of whose nature I am uncertain, and which I had not encountered elsewhere in stained films, either from mice or ticks.

By dark-ground illumination these bodies were seen to be perfectly circular in outline, varying in diameter from about 6–20 microns, and showing an even and delicate milky refraction. Within each body were small spherical granules, from 0·5–1 micron in diameter and intensely refractile. There was usually three or four of these, seldom more than six. The most curious feature of these bodies, however, was the extreme motility of these dazzling little granules, which darted from side to side of the containing sphere with amazing energy, and would have formed an admirable illustration of the movements of electrons within an atom. They were chiefly found in the spleen, but a few were also seen in the liver.

Their interest in connexion with the line of my inquiries was greatly increased by my subsequently encountering them in the bodies of infected ticks which had been kept after feeding at a high temperature—the condition, it will be remembered, under which young spirochætes make their appearance. To the eye the bodies were absolutely identical with those found in the spleen of the mouse, exhibiting the same refractility and the same intense motility of the contained granules. Stained specimens of the same material gave no evidence of them, doubtless because the granules only would stain, and their irregular arrangement with reference to one another would give no suggestion of a common matrix or capsule. In the experiment No. 113, which was one of those included in the composite Chart 2, these bodies were found in ticks of the lot kept at the highest of the three temperatures, 37° C., and in them alone. They were first noticed two or three days before the other ticks of the batch showed the usual rapid reappearance of spirochætes of the young type.

The next observation of these bodies was in connexion with an experiment, No. 111, of a different nature.

Here three adult ticks, members of a batch whose bites had infected a mouse on the occasion of their last feed, were now allowed to feed singly on separate mice, with a view to ascertaining which were still infective, and in order that any eggs subsequently laid by a tick of known infectivity might be studied. In this experiment two of the three mice were infected, the other remaining well. Subsequently, each of these ticks was dissected and the fluids and tissues examined by the dark-ground method; in each of the ticks which had proved to be infective these same curious bodies were readily detected, none could be found in the other tick. Granule clumps of the usual type were found in each tick, but a prolonged search disclosed no recognisable spirochætes.

Finally, six adult ticks, which had been bred in the laboratory and had before fed on infected blood, were again allowed to gorge on a heavily infected mouse. They were then placed in a bottle, which was kept in a water-bath at a temperature of 30° C. Sixteen days later they commenced to oviposit, and on examining some of these eggs four days later, both by staining and by dark-ground illumination, these same bodies were again seen by the latter method. No spirochætes were found.

At this point I was obliged to interrupt my inquiries, so I am still unable to do more than record the appearance of these bodies and the situations and circumstances in which I encountered them; but I think it will be admitted that the observations are suggestive of their having some connexion with the spirochætes. I refrain, with some difficulty, from speculations as to the probable nature of this connexion.

Apparent Growth of Spirochætes out of Granule Clumps.

My final reference to the dark-ground observations relates to the apparent growth of young spirochætes out of the granule clumps, but as this has already been recorded and figured in my last article, published in the *Annales* of the Pasteur Institute, I shall only recall that I found these forms by continuous observation of the crushed tissues or of the fluids of infected and heated ticks with the microscope kept in a thermostat at a temperature of about 30° C. The sketches reproduced in Fig. 3 will save further description of the forms seen, and it need only be added that all the forms figured were extremely motile. For some days before these forms had been seen spirochætes had either been absent or extremely rare in other ticks similarly treated, while immediately after the observation of the forms figured the tissues of the remaining ticks were found to be swarming with the young forms to which I have so frequently alluded.

OBSERVATIONS OF OTHER WORKERS.

I come now to the consideration of the observations made by other workers, either on the organism of tick fever or upon the morphology and life-history of other spirochætes. The volume of the work in question has already grown formidable, and it would be quite impossible for me to give of it anything approaching a full and critical review in the time left me. The utmost I can attempt is to mention some of the more essential portions of this work which bear directly upon my own experience and views, as these have been presented to you, and to examine in how far the observations are in agreement or discord. In doing this I trust my earlier remarks may be borne in mind, and that the brevity to which I am constrained may be my apology for the very inadequate and incomplete account which I must give of much that is of importance and, to myself, of great interest.

I think I may best deal with this work by discussing it under headings corresponding in order, as far as may be practicable, with the various parts of the investigations I have just described.

1. *The Morphology of the Spirochæte.*

There is, on the whole, little divergence of opinion in this direction, at all events as concerns the adult organisms found in the blood of man and experimental animals or studied in attempted cultures.

Many have described its structure as far as this is disclosed by various staining methods and by observation of living specimens. The fragmentation of the chromatin core, which may be taken to represent the nuclear apparatus, and the frequent differentiation of this into definite rods or granules, highly refractile and showing the staining reaction of chromatin, has been universally observed, and excellent descriptions, as well as good coloured plates, have been published. The work of Dutton and Todd, of Breinl, Fantham, Hindle, Carter, and many others leave no doubt that these changes occur. As to their significance, however, there is not yet agreement. I think it may be said that my British confrères, almost without exception, consider, as I do myself, that the change is a vital one and connected with the life-history of the organisms, but others hold that this is still unproven, while some, such as Marchoux and Couvy, [illegible] early stage of degeneration. Such a view regard it as an [illegible] marked by the undoubted as the latter would appear to be suppo[illegible] fact that the beading and segmentation of the chromatin is, as they have pointed out, a pronounced feature in spirochætes which are placed in unfavourable surroundings, as, for instance, in cultural experiments in which, whatever degree of initial success is obtained, the organisms eventually die off. This, however, I do not think need necessarily be held as evidence of its being a degenerative change, as we have many examples in microbiology of the formation of resting forms or of the earlier stages of a secondary cycle when the organism finds itself so unfavourably placed as to be in danger of dying out.

2. *Number of Species of the Relapsing Fever Spirochætes.*

Little need be added here. The recent literature of spirochætosis is full of accounts, mostly clinical or epidemiological, in which the type of fever encountered has been considered by the writer for one reason or another to be distinct from any of the three which are pretty generally accepted—viz., those due to *Sp. recurrentis*, *duttoni*, and *carteri*. More than one type of African relapsing fever is believed to exist, and others have been described in Palestine, in Persia, and in Mesopotamia. I think that all that can safely be said at present, for the reasons I mentioned earlier, is that while such varieties are very probable it is not yet possible to define with any confidence specific differences between the causative organisms.

3. *Artificial Cultures.*

Success has been claimed in this direction by Levaditi, by Duval and Todd, and by Noguchi, but only the last claims more than a temporary success, the cultures dying out after a few passages. At the same time, it is of great interest to know that these spirochætes can not only be kept alive, but can be got to multiply abundantly in vitro, if only for a time.

Interesting points emerge from the study of such cultures, and I have been struck by statements in connexion with several of the methods that the spirochætes were noticed to show a certain periodicity in the vigour of their multiplication, fresh crops of active organisms appearing at intervals of some days. Very small spirochætes were reported also as being found in some cases; for example, Levaditi speaks of "formes vibrionennes," which sound to me extremely like my young spirochætes, although in my own attempts at cultivation, in which the spirochætes were kept living and virulent for 51 days, I did not encounter small forms similar to those met with in heated ticks. Finally, nearly all who have worked with spirochætes in vitro note the frequency of the granular change in the organisms, as well as the lateral

and terminal buds, of which I shall speak later. Noguchi, in his classical researches on the cultivation of spirochætes, has noticed in several instances the occurrence of a granular phase; in the case of *S. phagedenis* he states that the granules when liberated appear to remain alive and at certain periods to develop into spiral forms. Similar granules were found by him also in cultures of *Treponema pallidum*, and he has stated that it was the finding of these which led him to re-study sections of paretic brains for the presence of this spirochæte, with results with which you are all familiar.

4. *Occurrence and Significance of Granules and Buds.*

Numerous observations have been made which bear on this point, either directly or indirectly. The actual formation of the granules and the observation of their origin from the spirochætes has been noted not only in connexion with *Sp. duttoni* but with many other spirochætes of widely differing habitat and mode of life.

I cannot pretend to give an exhaustive list, but may mention the following, in addition to the group responsible for the relapsing fevers of man: *Sp. gallinarum*, *Sp. bronchialis*, *Sp. theileri*, *Sp. phagedenis*, *Sp. anodontæ*, and *Sp. balbiani*, and *Treponema pallidum* and *Treponema pertenuis*.

In almost all of these the granular phase which has been recorded appears to follow very much the same lines, even in species so widely removed from one another in habit as the spirochætes of mammals and birds and those of Lamellibranchs, such as *balbiani* and *anodontæ*. The process of their development and liberation from the spirochæte have been very precisely described and figured by both Fantham and Bosanquet, and many of their observations are so closely in accord with my own upon *Sp. duttoni* that we might almost have been describing the same specimens.

On this point, therefore, I think it may now be accepted as a generalisation that spirochætes as a class tend at one stage of their life to form small granules which are subsequently liberated from the periplastic sheath. A similar statement may also, I think, be made in connexion with the curious buds or swellings which form upon spirochætes either terminally, subterminally, or laterally. These, too, have been observed by so many workers and in connexion with so many different spirochætes that their existence must also be taken as proved, whatever view be held as to their nature.

To turn now to the significance of the granules on the one hand and the buds on the other. Here we are on less certain ground. My own view, as you are now aware, is that from some of these granules or buds a new generation of young spirochætes may, under favourable conditions, arise. As regards the views of others, I think my best procedure will be to put before you very briefly the principal arguments or observations which have urged against what I may term the "vital" theory of their nature. Later I shall refer to work of a confirmatory nature.

It has been urged that the experiments of myself and others on infectivity, either through the bites of ticks or by the inoculation of tissues or secretions of ticks which showed no spirochætes, must, when infection resulted, have been due to our failure to observe spirochætes which in reality must have been present. This is the view held by Marchoux and Couvy, by Blanc, by Kleine and Eckhard, by Wolbach, and by Wittrock. In most cases they reach this conclusion as a result of finding spirochætes in their own experiments in the majority of cases in which the tick-bites or the inoculum proved infective. On this point I have never been so foolish as to claim that I could be certain of the absence of an odd spirochæte; but I cannot admit that I, and others who have had the same results, have in the experiments in question overlooked them through faulty staining methods or inadequate search. Further, I do not think that Marchand and Couvy, who are the chief exponents of this view, add to the cogency of their criticisms by assuming the existence of an "invisible" phase of the organisms to account for the temporary absence of spirochætes which they, too, have noticed in the bodies of ticks some days after feeding on infected blood.

German workers—Wittrock, Kleine, and Kleine and Eckhard—have chiefly repeated and extended Koch's original investigations in East Africa on the presence of the spirochætes in ticks which they had proved to be infective, and have confirmed Koch's observations as to the presence of recognisable spirochætes in the eggs of Ornithodorus. For them this accounts satisfactorily for the known facts of transmission and of the hereditary passage of infection, and they do not consider that any further stage of development of the spirochætes is required to explain these facts. In some of their work, and that of others as well, irregular results have been encountered, as all have encountered them, but I am not in sympathy with the explanation sometimes given that these failures to infect are to be attributed to the individual immunity of the experimental animal in some cases or of the particular tick in others. They have also carried out a series of experiments similar to those which were successful, in the case of trypanosomes, in proving the existence of a phase of non-infectivity in the tsetse fly. The results being negative, they conclude that no such cycle occurs in spirochætes.

Many have raised, and very properly raised, the objection that granules similar to those found in *Ornithodorus moubata* are encountered in a number of other ticks and other Arachnids. Marchoux and Couvy in particular describe and figure those they have seen in six different species of ticks and in *Laelaps echidninus*. Although the granules figured in some of their plates do not appear to me to resemble those I have been describing, I have no doubt that others do. Of other Argassine ticks which I have myself had the opportunity of examining—viz., *Ornithodorus savignii*, *Ornithodorus tholozani*, and *Argas persicus*,—only in the last-named did I find granules which, though differing in many points as regards their arrangement, relative numbers, and distribution, appeared to me similar to those found in *Ornithodorus moubata*. But the Argas in question had been employed in some experiments in the transmission of *Sp. gallinarum*, and the relation of this spirochæte to the granules found in the tissues of Argas has been the subject of elaborate studies by Balfour and others, many of which are confirmatory of my own experiences with *Sp. duttoni*. I may add that the closely allied *Ornithodorus savignii* with which I worked proved non-infective to mice, but in one instance when I fed one upon a mouse whose blood contained *Sp. duttoni* I did find a few granule clumps subsequently in the Malpighian tubules, the only case in which I encountered them in this species; I would not, however, lay much stress on this as my material was very limited.

It has further been suggested, for instance, by Bétancés that the granules are capable of being interpreted in another fashion as pre-secretory or as mitochondria, but many points in connexion with their distribution in the tissues and fluids of the tick appear to me strongly against such an assumption, and I have on more than one occasion encountered adult ticks in which I could find no trace of them.

What is undoubtedly puzzling is the great number of these granules occasionally observed in the Malpighian tubules or genital tissues of ticks which, even if they had acquired an hereditary infection, had never fed on spirochæte blood during their life. As the numbers of granule clumps found in the intra-ovarian eggs is never large it is obvious that the granules can increase in numbers without any fresh spirochætal infection. Assuming for a moment that the vital theory is correct it seems certain that they are therefore capable of multiplication in the granular form, and probable that their development into spirillar shape is an exceptional occurrence brought about by influences not as yet fully determined.

Turning now to the support to be obtained from confirmatory observations, many of my earlier experiments have been repeated and extended by Nuttall, Fantham, Hindle and Todd, to mention only those who have dealt with *Sp. duttoni*, and I must limit myself to referring you to their published work, merely adding that I do not think I misrepresent these workers in saying that they conclude from their own experiments, as I do from mine, that the granules are derived from *Sp. duttoni*, represent a vital process in the life of the spirochæte, and are neither degeneration products of these organisms nor granules derived from the cells of the host.

Fewer observations have been made on the significance of the buds so often mentioned. The majority have, I think, held them to be degenerative changes, while Todd, who concludes that the granules are vital and can give rise to a new generation of spirochætes, does not consider that this is the case with the buds. They are, however, so conspicuous and definite in their form and so uniform in structure, whether this is studied in stained films or in moist preparations by dark-ground illumination, that I feel that their further study is most desirable. At the present moment I am inclined to think that they are the precursors of some of the granule clumps, and I have an impression—I am not in a position to put it more strongly—that the clumps from which I have seen the young spirochætes developing were of this nature, rather than such as owed their origin to the fragmentation and extrusion in granular form of the chromatin core of the adult spirochæte.

5. *Observations in Recent Literature upon "Young Spirochætes."*

I have naturally searched the recent literature pretty closely for observations which might bear upon the forms which I have called "Young Spirochætes." While some state that they have seen no development of the granules into spirochætal form, others record having seen this happen, or mention observations which are at least capable of being interpreted on the assumption that such a change has actually taken place.

Dutton and Todd themselves stated, as far back as 1907, that it was apparently possible to trace the development of granules into comma-shaped masses of chromatin, and of those into small spirochætes, while if the "cysts" described by Breinl about the same time were of the same nature as the granule clumps in question, then he, too, considered these structures as originating in spirochætes, and as being capable once more of giving rise to them. Levaditi, in the cultural experiments already mentioned, in which he placed collodion sacs containing infected blood in the peritoneal cavity of rabbits, says that towards the end of the experiment very small forms, "formes vibrionennes," were seen, actively motile, pointed at both ends, and containing one or two grains of chromatin. I have also alluded earlier to Duval and Todd's cultures, and the appearance in these of an alternate increase and diminution of the number of spirochætes seen, an observation suggestive of successive crops of new individuals.

Bosanquet, in his work on *Sp. anodontæ*, records the finding of very short forms, and Balfour, in commenting on this work, mentions that he had found very similar forms, undoubtedly developing from granules, in the Malpighian tubules of *Argas persicus* infected with *Sp. gallinarum*. Fantham, working with *Sp. bronchialis*, states that the granules which are derived from them have been seen in the tick to elongate and assume a sinuous form; he observed the emergence of very small spirochætes from the group of granules.

In addition to such positive evidence it appears possible to extract a little of the same nature even from the work of some of those whose researches have led them to conclusions altogether adverse to the views I have put forward. For example, Marchoux and Couvy, in speaking of the effects of temperature on the possible developmental cycle of *Sp. duttoni*, record an experiment in which they could find no evidence of spirochætes in a tick which had been kept at a moderate temperature; but after placing this tick at 28° C. for two days they noted the appearance of numerous small and actively motile spirochætes. Although they would no doubt offer a different explanation for this, I think it may well have been an example of the development of a crop of young spirochætes as a result of the higher temperature, similar to what I observed in the experiments I have described to you. In another part of their work they confirm my observation of the granules, when kept at 37° C., developing into bacillary or even vibrionic form, though not into true spirochætes. Kleine and Eckhard, also, who worked in Tanganyika, and in general confirmed Koch's work in German East Africa, mention their encountering in ticks collected from the native quarters spirochætal forms as small as cholera vibrios, though they were unable to say whether they were degeneration forms or were capable of growing to full size.

These observations constitute a body of evidence which it is not easy to set aside, and I feel that if I have erred in the conclusions which I have drawn from my own observations I err in excellent company.

6. *Influence of Temperature.*

There are a number of points relative to the influence of temperature upon the development of the young forms of spirochætes in recent work upon *Sp. duttoni* *Sp. gallinarum*, and *Sp. recurrentis*.

In the first place a large part, perhaps most of the work in question, was done in the tropics or subtropics, where the temperatures, though no doubt showing seasonal variations, must, on the whole, have approximated to those which I employed artificially with the help of the incubator and water-bath. At all events, the temperature at which my stock of ticks were kept—21° to 23° C.—can rarely have been touched. To me this suggests a highly probable explanation of the discrepancy in the results recorded by such tropical investigators and those which have been obtained by myself and others whose work on this subject has been done in a climate which is politely labelled temperate. I do not for a moment question the results of Koch, of Kleine and Eckhard, and others who found, in Africa, a high percentage of infective ticks, and who record the ease and frequency with which spirochætes were detected in ticks whose bites proved infective to animals, and in the crushed organs or the fluids of ticks which, when injected into animals, infected them. This I think is quite what one might expect, assuming the change into the young form to be dependent upon a certain height of temperature and probably upon some other less readily appreciated climatic conditions. Our devices in imitation of these natural environmental conditions have, no doubt, from the tick's point of view, been crude enough, and may well be responsible for the comparative rarity of what I may call positive results.

The "formes vibrionennes" of Levaditi's cultures were obtained at the high temperature of the peritoneal cavity of the rabbit, a factor which may have had a bearing upon their appearance. Hindle, also working with *Sp. duttoni*, repeated much of my work, and found that while infectivity appeared to be limited to the gut-contents, sex organs, Malpighian tubules, and excrement of ticks maintained at 21° C., in these which he kept at 35° C. all the organs and tissues, including the salivary glands, were found infective. He notes, also, a shorter incubation period in mice when material from the heated ticks was used. He found no spirochætes in the organs of the 21° C. ticks, but when infected ticks were heated for 2–3 days at 35° C. he saw, as I did, the reappearance of spirochætes in the gut and the organs of the ticks, as well as in the cœlomic fluid. Fantham, by keeping ticks' eggs at a temperature of 34°–37° C. for 4–6 days before inoculating their contents into animals, was able to infect, respectively, fowls with *Sp. gallinarum* and mice with *Sp. duttoni*, and he also noted microscopically the development of granules into bacillary forms. In a later communication he adds that when infected eggs were kept at 37° C. for five days the larvæ which subsequently hatched from them were seen to harbour typical spirochætes, while he was also able to follow all stages in the development of the coccoid forms into elongated bodies and eventually into typical spirochætes. Further, he found that the inoculation of the contents of eggs containing granules alone was rarely followed by infection unless they had been previously heated for a few days at 35° C.

Nicolle and his colleagues, of whose important work on the transmission of *Sp. recurrentis* I shall speak in a moment, mention that the lice with which they experimented and in which they noted the reappearance of spirochætes were kept in a warm chamber at 28° C., a fact which may quite possibly have had an important bearing upon their results. From Marchoux and Couvy's work may also be extracted some observations which seem to support the significance of the temperature factor in such experiments. I have already referred to the instance in which they found numerous very small and active spirochætes in a tick which had been kept for two days at 28° C, but in which they had previously failed to find them. In speaking elsewhere of the influence of fasting on the presence of spirochætes in Argas, they say they found them in abundance in the cœlomic fluid in ticks of this species which had been kept for 45 days at 28° C. Kennedy, working at Baghdad, presumably at a high temperature, on lice removed from relapsing fever cases, found in addition to the buds formed on the ingested spirochætes a number of exceptional small spirochætes in one part of the body of the louse. Lastly, Borrel and Marchoux, working some years ago with *Sp. gallinarum*, stated that this spirochæte developed rapidly in Argas at a temperature of 35° C., but that this did not take place at temperatures between 18° and 25° C.

Without laying too much stress on any individual observation, especially in view of the fact that in some instances the observers' attention was not directly fixed on this matter of temperature, I think it is justifiable to take them as a whole as affording considerable support to the view that a relatively high temperature has a most important influence on the development of these spirochætes in their arthropod host, and also upon the infectivity of the latter.

7. *Corroborative Work upon Relapsing Fever.*

In view of its importance I have left till the end a brief consideration of the recent work of Nicolle and his colleagues at Tunis, much of which has been substantiated by parallel observations made in Algiers by Sergent and Foley. This work, although carried out upon the parasite of the European type of relapsing fever, *Sp. recurrentis*, touches so closely upon the mechanism of infection in the other relapsing fevers that it needs no apology to consider how far the observations I have detailed in connexion with *Sp. duttoni* fit in with the facts and views our French colleagues have recorded.

Personally, I had long felt it to be a very weak point that little in the way of corroboration of my observations was forthcoming from the voluminous studies which had been made upon the very closely allied organism of European relapsing fever. It was not until Nicolle and his colleagues had, in a series of most valuable communications, established beyond doubt the part played by the louse in the transmission of this fever that real progress could be made in the study of *Sp. recurrentis*. The work in question is too long to permit of my doing more than giving you, in baldest outline, their main conclusions.

Tracing the fate of spirochætes ingested by lice by means of daily dissections and examination of specimens, both by staining and by dark-ground observation, latterly also by sections of lice stained by the Cajal-Levaditi method, they find that the spirochætes become rapidly immobilised in the stomach, altered in appearance and staining, and disappear altogether after about 24 hours. No further trace of them could be found until on or soon after the sixth day, when they suddenly reappeared in great numbers in the

body cavity of the louse. These new spirochætes were actively motile, typical in shape, but at first thinner and shorter than those of the blood; later they become identical with the blood forms. Having made their appearance, they may persist up to the twenty-second day. The examination by means of stained sections of lice showed that the original spirochætes are taken into the stomach cells, but they could see no trace of them there later than 40 hours after the feed on infected blood. When the young spirochætes, as they too name them, make their appearance in about 148 hours sections show that they are absent from the lumen of the gut and from the biting parts, but abundant in the body cavity and especially in the lacunary spaces in the legs. Testing the infectivity by inoculations of crushed lice at various periods after the infecting feed, and employing in these tests not only monkeys but men, they show that (1) up to the fifth day successful infection is inconstant; (2) on the sixth day, in spite of the invariable absence of demonstrable spirochætes, infection is constant; (3) after this infection is again inconstant, and may not result even when the presence of spirochætes is demonstrated

Their observations lead them to the conclusion that there is an invisible, pre-spirillar stage of the spirochæte in the louse, and that it is during this stage, and at the moment just before the sudden appearance of great numbers of young spirochætes, that the louse is most dangerously infective, although it may also prove infective at any time from just after the feed on spirochæte blood up to the fifteenth day. Infection of man they consider takes place through the crushing of lice on the skin or their forcible removal, the fragility of the legs making it easy to imagine how the spirochætes escape and gain entrance to the bite or scratch. Infection through the biting parts of the louse they have shown conclusively does not occur. They consider that the spirochætes of adult form only exceptionally multiply in the louse by transverse or other mode of fission, since division forms are hardly ever seen; whereas the young forms, when first they are observed, are present in immense numbers, and do not increase further; on the contrary, the larger they grow the fewer are there found and the less pronounced their motility. They consider it probable that a similar train of events happens in man, and Sergent and Foley have shown in this case that the blood may, at a certain stage, be highly virulent in spite of the absence of spirochætes. In general, they consider that the only active form of the spirochæte, whether in man or in the louse, is the "invisible" form which alone is virulent and capable of division.

I shall not attempt a detailed comparison of the various points brought out in this important research with analogous observations in connexion with the behaviour of *Sp. duttoni* in *Ornithodorus moubata*, as I think it will be sufficiently clear that there is a very close correspondence in the behaviour of the two spirochætes in their respective arthropod vectors. I confess that I shall be not only disappointed but also surprised if further work does not reveal the "invisible" stage of *Sp. recurrentis* as a granular stage similar to that which occurs in *Sp. duttoni*, and probably taking its origin in the terminal or lateral buds of which I have made so frequent mention. The recent observation of Kennedy in Baghdad of such buds in lice taken from relapsing fever cases may perhaps be a further link in the chain of evidence which is lengthening around this difficult subject.

Although it would take me too far from my subject to discuss the significance of the Rickettsia bodies now associated with typhus and trench fevers it should not be forgotten how close a resemblance they bear to these spirochætal granules, and further researches in connexion with them will be eagerly awaited.

CONCLUSION.

I could wish that the observations which I have laid before you were sufficiently clear in their interpretation to allow of my formulating conclusions of a definite nature, such as might be generally accepted. The time has not yet arrived for that, and further research is clearly necessary. The most that I feel entitled to do is to give a short summary of my personal opinions for what they are worth as to the apparent life-history of *Sp. duttoni*, in the light of my own observations and of my interpretation of those made by others on this and closely allied spirochætes. The following appears to me to be the probable train of events.

Starting from a patient suffering from tick fever, whose blood contains *Sp. duttoni* and who is bitten by a tick, the spirochætes taken into the tick's intestinal tract gradually lose their motility, and many undergo structural changes such as the formation of granules and the extrusion of buds. They do not multiply in the tick in this form and rapidly disappear, few being left by the eighth to tenth day. The granules are either extruded during life or, more probably, are liberated by the breaking down of the spirochætes, either in the gut or within the tissues into which they have wandered. These granules present themselves as small clumps embedded in a homogeneous matrix, and are found chiefly in the cells lining the Malpighian tubules and in the genital tissues. They persist throughout the life of the tick, and are to be found at times in the intra-ovarian eggs as well as in the young nymphs hatched from these eggs. In the young nymph the granules are capable of multiplying, sometimes to an enormous extent. The buds formed on the ingested spirochætes contain similar granules, and when separated from the parent spirochæte are difficult to distinguish from the other granule clumps. They are rare in comparison with the number of granule clumps arising from the segmentation of the chromatin.

Under certain conditions, of which a high temperature is one, though probably not the only one, spirochætes tend to reappear in the tick about ten days after feeding. This occurs suddenly, immense numbers being found in the tissues and cells of the body. These are at first different in appearance to the blood forms, being smaller, thinner, more faintly staining, and showing greater irregularity in their curves, they are actively motile. These young spirochætes have been frequently seen in stained films arising, apparently, from granules, and by the continuous observation of living specimens, at a suitable temperature, this origin has been confirmed. When once young spirochætes have made their appearance they tend to persist in this form throughout the life of the tick, and there is some reason to think that it is this form, or the granule stage immediately preceding it, which is most infective. It appears probable that the relapse in man and in animals may be due to the development of fresh crops of spirochætes out of granules formed by those organisms which caused the first attack. Observations upon other pathogenic spirochætes make it probable that a similar cycle of development is common to them all.

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OPTIC NEURITIS IN ENCEPHALITIS LETHARGICA.

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IN searching the literature of encephalitis lethargica I have been able to find few references to changes in the fundus oculi or disturbance of visual function. Macnalty,[1] in the Local Government Board Report of 1918, reports that in 50 cases the fundus oculi was systematically examined; in one case the retinal vessels were somewhat indistinct, but in no case was true papilloedema seen. Morax and Bollack,[2] in a paper on ocular disturbances in encephalitis lethargica, state that they have never found any impairment of visual acuity, contraction of the fields, or changes in the fundus. On the other hand, Buzzard[3] reports as encephalitis lethargica two cases showing papilloedema, both of which had symptoms of raised intracranial pressure, which were proved at operation to be caused by subdural extravasation of blood; microscopical examination of the brain in one of these cases showed changes typical of encephalitis lethargica; in the other the diagnosis appeared doubtful on clinical grounds, and there was no post-mortem. Vincent[4] records two cases, diagnosed on good clinical evidence, in which visual acuity was grossly impaired and subsequently recovered, but he makes no mention of ophthalmoscopic examination.

Bramwell,[5] in a paper dealing with a wide experience of the disease up till May, 1920, says that changes in the fundus oculi are seldom met with, "though in several cases I have seen engorgement of the veins, and in two cases in which the diagnosis was not absolutely certain, and which are not included in this series, an optic neuritis was present."

Record of Four Cases.

The four cases which I am about to record were all seen during the past summer in the United States of America, where encephalitis lethargica appeared to be more prevalent in epidemic form than it was in England during the same period. In each case definite changes were observed in the fundus oculi, together with clinical signs and changes in the cerebro-spinal fluid which favoured their inclusion in the encephalitis lethargica group.

CASE 1.—Ezra F., aged 37, was admitted to the Johns Hopkins Hospital on July 28th, 1920. Family history nil ad rem. Personal history: He is unmarried, a ship rigger by trade, has suffered with "rheumatism" since the age of 21, had gonorrhœa at 35; denies syphilis; has never had any otorrhœa. Present illness: At the end of December, 1919, he had "influenza"; he cannot say whether he had fever, but felt chilly, had aches and pains all over, and sat by the fire all day. He was not especially drowsy; headache was not a prominent symptom; there was no diplopia. His vision seemed a little "dim," but he could read. He returned to work on Jan. 15th, 1920, but felt "droopy," and had aches and pains all over. About Feb. 1st he began to have spells of giddiness—whether he was doing heavy or light work made no difference; vision became misty, his eyes seemed to dance and he had occasional diplopia. He noticed also that "he had no accuracy in his work"; in tying up ropes, &c., he had lost his sleight of hand. On Feb. 17th he gave up work again. He then had pain in the right hip-joint, through the shoulders, and in the back of the neck. Stiffness and weakness of the right leg developed, and pain across the small of the back, with first retention of urine and then some degree of incontinence; no loss of control over anal sphincter. This passed off, but about March 15th there began feelings of numbness in the left arm and shoulder, followed by trembling in the same limb. In June began twitching movements in the right arm and leg, which cleared up after a while. About this time he noticed difficulty in remembering dates and names of persons, and trouble in pronouncing his words, with a tendency to elide syllables. He knew he was making mistakes, but his voice and tongue seemed stiff, so that he could not control them. He has felt a fluttering and jerking of his heart at times and a choking sensation in his chest. Frontal headaches have been a constant feature of his illness, but he has had no vomiting, no epileptic seizures, no uncinate attacks. Most of his symptoms have disappeared, but he complains of stiffness, soreness, and headaches.

On examination he is a well-built, muscular man; temperature and pulse-rate normal; no evidence of disease other than in the nervous system. Mentally he is quiet, rather lethargic, but in good contact, and well oriented, memory for remote past good, for the period of his illness vague. He retains only five digits and shows a constant tendency to transposition—e.g., 317,592 was repeated as 317,952, and 9,416,375 as 9,431,765. Calculation is well performed, and his general grasp of information very fair. In his mood he is depressed about his physical condition. He says he has been spending all his money trying to find out what is wrong. Vision: There is peripheral constriction of the visual fields (rough test); both optic discs show marked œdema, and there is one diopter of swelling of the nasal edge of the left. No hæmorrhages. Hearing: Watch heard at 2 inches right and 4 inches left, with positive Rinné's test both sides (moderate degree of nerve deafness). Cranial nerves: Pupils normal; no ptosis; extra-ocular movements good; nystagmoid jerkings on upward deviation. Slight weakness of right face in lower part.

Sensation: He misses a few cotton-wool touches on the left hand and arm, and says that he feels touches better on the left leg than the right, better on the left side of the face than the right. Vibration of a tuning-fork is appreciated poorly on the left hand, and there is some loss of sense of position in the fingers of this side. There is a zone of hyperæsthesia to pinprick around the trunk at the seventh dorsal level. The patient is a good witness and consistent in his answers. Motor system: There is general muscular weakness; no spasticity nor atrophy, no localised palsy, no cerebellar defects. Reflexes: The tendon-jerks of both arms very brisk. The left epigastric weaker than the right. Abdominals brisk and equal. Knee-jerks brisk and equal. Right ankle-jerk greater than left. Plantar responses both extensor. Sphincters: Some difficulty in starting micturition.

Laboratory findings: Blood Wassermann negative. Cerebro-spinal fluid: 70 cells mononuclears, ++ globulin, negative Wassermann, negative gold sol curve.

Summary.—Duration of illness eight months with varying symptoms of sensory and motor disturbance, both general and visceral, and remittent course. Bilateral optic neuritis, patchy anæsthesia, general muscular weakness, extensor plantar responses, defective memory. Lymphocytosis and + globulin in cerebro-spinal fluid.

The most interesting feature of this case is its chronic remittent course. I have now seen several such cases, and Economo[6 7] has recorded one such with a fatal issue after an illness of nearly two years, during which the infective process remained smouldering with signs of extension from one part of the nervous system to another, this being proved post mortem by the existence of inflammatory foci at various stages.

CASE 2.—Edna J., aged 19, coloured, was admitted to the Johns Hopkins Hospital on July 27th, 1920, complaining of aching, stiffness, and pain in the legs and inability to walk properly. Previous history negative except for occasional attacks of headache and vertigo since the age of 15. The present illness started suddenly on Jan. 1st, 1920, with headache, fever, and vomiting, stiffness of the neck, and pain on the left side of the head radiating down into the neck. She was admitted into the University Hospital, Baltimore, on Jan. 2nd, where she was diagnosed cerebro-spinal fever. The cerebro-spinal fluid was cloudy, contained 720 cells per cubic inch (sic), and globulin ++. Smears and cultures negative for organisms. Wassermann reaction feebly positive in blood, negative in spinal fluid. She was discharged on Jan. 25th. She returned to her work as domestic servant in March. In May she began to have headaches, and her ankles became stiff, numb, and heavy. She has also complained of stiffness and soreness in the lumbar region, and of involuntary twitchings of the left arm. For the last two months her walking has been affected. There is no history of convulsions or of any symptoms pointing to focal brain lesion.

On examination she is a well-nourished, healthy working girl; temperature and pulse-rate normal. Vision: There is a moderate degree of myopia. Acuity with glasses 20/20 right and 20/70 left. The fields show concentric contraction. Both discs show hyperæmia, moderate engorgement of central veins, filling in of the physiological cups, and marked œdema amounting to 2D of swelling and extending out into the retina. Hearing: Watch heard at 18 inches right and left. Cranial nerves normal; no defects of sensibility. Motor system: Tone, power, and coördination normal except for some flabbiness of the glutæi with almost complete bilateral paralysis of abduction at the hips. This accounts for her gait which is waddling with short steps, not unlike that sometimes seen in a muscular dystrophy.

Reflexes: The tendon-jerks of the arms show a diminution on the left. Epigastrics and abdominals not obtained. Knee- and ankle-jerks very feeble and equal. Plantar responses indefinitely flexor. Sphincters: Normal control. The patient was not feeling ill in herself and was up and about. She was discharged to the out-patient department for observation.

Summary.—Duration of illness seven months with acute onset of meningeal type and subsequent remissions including various sensory and motor symptoms. Bilateral optic neuritis, paralysis of abductors of hips with resultant waddling gait. Feebly positive W.R. in blood, lymphocytosis and ++ globulin in cerebro-spinal fluid.

Apart from the chronic course the main points of interest in this case are the acute meningeal onset, the pains, and the localised muscular palsies. Meningeal symptoms in encephalitis lethargica have been referred to by several observers,[8 9 10 11] and a case with pains and paralysis of multi-radicular distribution is recorded by Bassoe.[12]

CASE 3.—Esther W., aged 9, was admitted to the Children's Hospital, Boston, on August 3rd, 1920. The family history is negative. The patient had whooping-cough and bronchitis at 2 and measles at 5. She is right-handed. The present illness began in January, 1920, when her teacher complained that the child was dull and not getting on well at school; in using a ruler she would fail to rule a straight line. She complained to her mother of pains in the arms and legs and headaches, but continued at school. On March 1st involuntary movements of the left hand were noticed at table, and shortly afterwards twitching of the left side of the mouth. On March 15th her tonsils and adenoids were removed but she was up and about next day. Two days later she developed a high temperature and enlarged glands and was said to have the mumps. A week later, on getting out of bed to go to the lavatory, she was unsteady on her legs, and in the course of a day or two became paralysed from the knees down. There has been little change since, except that in June she had bouts of headache and vomiting for one week and has occasionally complained of "pins and needles" in her arms and legs. She has read a great deal during her illness and made no complaints about her eyes. There is no history to be obtained of convulsions.

Examination on Sept. 3rd, 1920, revealed a healthy-looking, well-nourished child. Rectal temperature 100° F., pulse 80. She is somewhat irritable, but her mental state is in no way abnormal. Vision: Acuity—she reads small print. The fields show a complete left homonymous hemianopia. Both optic discs show well-marked swelling with moderate engorgement of the veins; the change is more marked on the right, but swelling is less than 1 D. There is a small linear hæmorrhage on the nasal margin of the right disc. Hearing: Watch heard at 8 inches right and left. Cranial nerves: Pupils equal; right not quite central, being a little displaced inwards. Reactions to light and distance normal. There is horizontal nystagmus on fixation to the right, the slow component being to the left. There is some weakness of the left face more marked in emotional than voluntary movement. No other defect. Sensation: In both hands a few cotton-wool touches are missed on the fingers, pinprick is not appreciated normally and there is imperfect sense of position. She is unable to recognise easily objects placed in her left hand, but this probably depends upon the paralysis of the fingers. There is definite impairment of sensation of cotton-wool and pinprick on both feet over an area corresponding to "boot" distribution. Sense of position in the toes is absent and vibration is not appreciated on the dorsum of either foot. The calves are more tender to deep pressure than are other muscle groups. Motor system: Involuntary movements of the left arm are the most striking feature. They are absent when the patient is quiet and at rest, but are brought into prominence when she is excited, and when she makes any vigorous bodily movement, especially if she makes an effort with her right arm. They consist of rhythmical alternating movements of the antagonistic groups of muscles, most marked in adductors and abductors of the shoulder, also pronation and supination of the arm, and extension and flexion of the wrist; the fingers are held flexed, and take no part in the movement, and there is a very little at the elbow-joint. The movements are of small amplitude, and in rate about three excursions per second. The limbs are atonic and there is some atrophy of the small muscles of the hands, especially the thenar groups. Both upper limbs show weakness of peripheral type, the left more than the right. The fingers of the left hand, however, remain in a position of flexion with some spasm, like the hand of a hemiplegic. The power of the trunk musculature appears normal. The lower limbs show complete bilateral, flaccid paralysis of the feet. On the left side the weakness extends to muscles at knee- and hip-joints, flexor and extensor groups being about equally affected. Reflexes: Tendon-jerks in arms and legs all absent, as also are abdominal and plantar reflexes. Sphincters: The child will occasionally void in bed if she does not get the urinal at once. The cerebro-spinal fluid examined on August 17th showed 11 mononuclear cells. Von Pirquet's skin reaction negative. On Sept. 5th the condition was much the same; evening temperature 100·6° rectal. On the 9th a second lumbar puncture yielded clear fluid containing 13 lymphocytes per cubic millimetre, no bacteria on examination, negative culture; Wassermann reaction negative; gold sol curve negative. Physical condition unchanged.

Summary.—Duration of illness eight months, beginning with change in disposition, clumsiness of movements, and pains in arms and legs; subsequently weakness and involuntary movements of left arm and face, febrile illness (? mumps), paralysis of legs. Bilateral optic neuritis, left homonymous hemianopia, rhythmic choreiform movements of left arm, flaccid palsy of lower limbs with absent tendon-jerks, hypoæsthesia of glove and stocking distribution. Lymphocytosis in cerebro-spinal fluid.

The involuntary movements in this case were of a type frequently observed in the disease.[14 15] The polyneuritic symptoms were striking. Loss of tendon reflexes in encephalitis has been noted by Guillain,[16] Draper[17] has drawn attention to peripheral palsies of the lower limbs of lower motor neurone type, while Macnalty[18] and Barker, Cross and Irwin,[19] recognise a polyneuritic form of the disease. Hemianopia in a case of encephalitis lethargica has been recorded by Buzzard.[13]

CASE 4.—Florence S., aged 10, was admitted to the Harriet Lane Home, Johns Hopkins Hospital, in July, 1920. The family history and previous history were negative. The story of the present illness is that in the middle of May she had a sudden attack of headache and vomiting; two weeks later her legs began to feel weak, and this weakness progressed rather gradually until she reached her present condition three weeks ago. She has had occasional attacks of headache and vomiting since the onset, but has never appeared really ill. On examination: She is an attractive child, somewhat undernourished, but appearing to be quite comfortable. There are no abnormalities apart from her central nervous system. Vision: Acuity and fields normal. The right optic disc shows a blurred nasal margin, and the central vein is engorged. The upper margin of the left optic disc is also indistinct. The cranial nerves show no defect. Sensation: She misses nearly all cotton-wool touches on the feet, the anæsthesia being of a "boot" distribution. There is also loss of sense of position in the toes of the feet, and to a lesser degree in all the fingers. Both calves are somewhat abnormally tender to pressure. Motor system shows very extensive weakness of the limbs, which is fairly even in its distribution, more marked in the lower limbs than the upper, and, if anything, more in the distal than the proximal muscles. The muscles of the pelvic girdle are involved, and she gets up from the supine position very much after the manner of a myopathic. In the finger-nose-finger and diadokokinesis tests she shows marked awkwardness, probably due to weakness. Reflexes: Arms: triceps present and equal; biceps and supinator absent. Epigastrics: Right tires before left. Abdominals present and equal. Knee- and ankle-jerks absent. Plantar responses feebly flexor. Sphincters normal. Gait is unsteady and somewhat of the "steppage" type on a wide base.

Laboratory findings: Blood Wassermann negative. Cerebro-spinal fluid shows 28 cells, all mononuclears, + globulin, and negative Wassermann.

Summary.—Duration of illness three months, beginning acutely with headache and vomiting; subsequently progressive weakness of legs. Haziness of both optic discs, impairment of sensation in feet and hands, gross weakness of legs and arms, with loss of tendon-jerks. Lymphocytosis and + globulin in cerebro-spinal fluid.

This case presented a purely polyneuritic picture; except for the changes in the fundus and the cerebro-spinal fluid findings, it would have been diagnosed as infective polyneuritis. It would hardly have been included in the present series had it not been for the link afforded by Case 3.

Differential Diagnosis.

Since we are at present unable to identify the causal virus of encephalitis lethargica, and are without any serological test of positive value, the diagnosis of the disease in cases which do not come to post-mortem must largely depend on the exclusion of other possibilities. The title encephalitis lethargica, originally proposed by Economo and now universally established, is in many ways unfortunate. It is now

generally recognised by all who have had wide experience of the epidemic that there are many cases which at no time display lethargy, and that the degree to which the brain is affected is extremely variable, while any part of the nervous system may be involved in the diffuse inflammatory process. In fact, Barker, Cross, and Irwin,[11] in a recent review of the disease as it has appeared in the U.S.A., have discarded the title encephalitis lethargica, and give their paper under the heading "On the Epidemic Acute and Subacute Non-suppurative Inflammations of the Nervous System Prevalent in the U.S.A. in 1918–19," including encephalitis, encephalomyelitis, polyneuritis, and meningo-encephalo-myeloneuritis. They assume as the cause a single infectious agent which attacks the central and peripheral cerebro-spinal nervous system and its coverings in a widespread, though at the same time a patchy or disseminated way. If this definition of encephalitis lethargica be accepted, the cases here recorded may all be included under it.

Taking them severally, No. 1 hardly admits of any other diagnosis than encephalitis lethargica after the exclusion of syphilis by the serological tests. In No. 2 the original diagnosis was cerebro-spinal fever, but the negative bacteriological findings in the cerebro-spinal fluid and the subsequent clinical course were against this. In Nos. 3 and 4 poliomyelitis had to be considered.

Hertz, Johnson, and Depree[20] have reported as acute polio-encephalo-myelitis the case of a boy, aged 12½, with acute onset of left hemiplegia and subsequent development of mild pyrexia, flaccid palsy of both legs with absent tendon-jerks, paralysis of the left abducens, atrophy of the left half of the tongue, and bilateral optic neuritis. The cerebro-spinal fluid contained "numerous lymphocytes and polymorphs." Later there was slight wasting in the muscles of the affected limbs. The symptoms cleared up in the course of a year leaving a residual left hemiparesis with the usual signs. Batten[21] in his comprehensive review of poliomyelitis refers to a single case, that of a child supposed to have poliomyelitis who became permanently blind as the result of her illness, and says "there was slight swelling of the disc but no marked optic neuritis." Peabody, Draper, and Dochez[22] found no abnormalities of the optic nerve in those of their cases which were examined, and in reviewing the complete literature of poliomyelitis up to 1912 quote Wickman as recording optic neuritis in a single acute case, Tedeschi who found optic atrophy and blindness in one eye in a chronic case, and Muller who found no abnormalities of the fundus in a large number of acute cases. Concerning polyneuritis in anterior poliomyelitis Peabody, Draper, and Dochez[22] say nothing. Batten[21] includes a polyneuritic type in his clinical classification of the disease, but later concludes that there is no good clinical evidence that the virus of poliomyelitis can give rise to a polyneuritic picture. It may be said, therefore, that Cases 3 and 4 do not correspond with any recognised type of anterior poliomyelitis. Moreover, all four cases described in this paper became ill at a time of year at which the seasonal incidence of poliomyelitis was low, and while this disease was not present in epidemic form, though encephalitis lethargica was prevalent.

The polyneuritic picture in Cases 3 and 4 at once reminded the writer of cases of acute febrile polyneuritis seen in France during the war, in which, as Holmes[23] has described, the paralysis of the limbs was relatively uniform in comparison with other forms of polyneuritis, the distal muscles being not much more severely involved than the proximal groups, and there was surprisingly little sensory involvement, loss of deep sensibility being more pronounced than superficial anæsthesia. In acute febrile polyneuritis, however, Holmes found no changes in the cerebro-spinal fluid, in contradistinction to the cases recorded above.

Optic Neuritis in Disseminated Myelitis.

In relation to the four cases at present under discussion it is worth while to consider the disease long known as acute disseminated myelitis. Under this purely anatomical heading have been included a number of cases of obscure pathology characterised by the presence of widespread patches of non-suppurative inflammation in the spinal cord.

Devic,[24] in 1894, first drew attention to the occasional occurrence of optic neuritis in this disease. Dreschfeld,[25] also in 1894, recorded two cases of it with optic neuritis, in one of which careful microscopic examination showed inflammatory changes in the optic nerves. In discussing the ætiology he says that the toxic agents which so often give rise to peripheral neuritis may also affect the spinal cord and quotes Fuchs's[26 27] statement that in multiple peripheral neuritis very similar changes are sometimes seen in the optic nerves. Several papers have since been published recording new cases of this syndrome—F. Taylor,[28] J. Taylor and Collier,[29] Clowes,[30] and Hillion.[31] The last-named writer was able to collect 45 cases from the literature, in one of which observed by Weill and Gallivardin[32] there were found acute diffuse myelitis of the lower dorsal cord and lumbar enlargement, double optic neuritis, early peripheral neuritis, and diffuse round-celled infiltration of the cerebral cortex. Microscopical examination[33] of the tissues, however, showed changes unlike those found in the recent epidemic of encephalitis lethargica.

None of the four cases here recorded corresponds clinically with the picture of acute disseminated myelitis, the main points of difference being the absence of gross sensory loss and sphincter disturbance; but the involvement of the optic nerve in one form of diffuse inflammation of the nervous system raises the probability of its occurrence in another.

Summary.

1. Four cases are reported in which optic neuritis was associated with signs of widespread lesions of the nervous system.

2. Despite individual points of resemblance none of these cases corresponds with the clinical picture of acute disseminated myelitis, anterior poliomyelitis, or acute febrile polyneuritis.

3. If the definition put forward by Barker, Cross, and Irwin[11] be accepted, the clinical signs of all four cases are consistent with the diagnosis of encephalitis lethargica.

4. In Case 2 the Wassermann reaction in the blood was feebly positive. In the blood of Cases, 1, 3, and 4, and in all four cerebro-spinal fluids, the Wassermann reaction was negative.

5. In all four cases the cerebro-spinal fluid showed changes consistent with the diagnosis of encephalitis lethargica.

6. In the association of optic neuritis with acute disseminated myelitis we have an instance of involvement of the optic nerves in a diffuse inflammatory process affecting the nervous system, which is analogous to the association of optic neuritis with encephalitis lethargica.

My thanks are due to Dr. W. S. Thayer and Dr. John Howland, of the Johns Hopkins Hospital, and Dr. Stewart, of the Children's Hospital, Boston, for permission to publish my notes on their cases.

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SODIUM BICARBONATE TOLERANCE IN THE TOXÆMIAS OF PREGNANCY.[1]

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THE object of this communication is to show the applicability to the toxæmias of pregnancy of Andrew Sellards's work on acidosis. The condition is seen in a pronounced form in diabetes, and since the discovery of β-oxybutyric acid and aceto-acetic acid in the urine of these patients, it seems sometimes to be thought that acids are circulating in the blood. This is not the case, as, even in the most extreme cases of acidosis, death occurs before any gross alteration takes place in the reaction of the blood which, normally, is slightly alkaline from the presence of protein, carbonates, and phosphates. This alkalinity is maintained in spite of the fact that on a mixed diet there is a production of acid bodies from the metabolism of carbon, phosphorus and sulphur. The tendency to acid formation is corrected both in health and disease by (1) oxidation, (2) excretion, and (3) neutralisation.

1. *Oxidation.*—Carbon is oxidised and then excreted as CO_2 by the lungs and as urea by the kidney.

2. *Excretion.*—In addition to getting rid of the products of partial or complete oxidation, the kidneys maintain equilibrium by their property of excreting a normally acid urine from a normally alkaline blood-serum. This is done largely by the excretion of acid phosphates such as NaH_2PO_4. But it will be noted, that before excretion, alkaline bases such as sodium are required to combine with these acid bodies.

3. *Neutralisation.*—This may be effected (*a*) by the fixed bases of the food, or (*b*) by ammonia. Most of the ammonia excreted in the urine is for the purpose of neutralising acids; this is shown by the fact that giving large doses of sodium bicarbonate by the mouth will reduce the ammonium percentage to 0·5 per cent. of the total urinary nitrogen. Normally 2 to 5 per cent. of the total nitrogen in the urine is used to neutralise acids; in acidosis the percentage thus used may rise to 40. If the increase in ammonia is due to a defect in the protein metabolism and not to an acidosis it will be unaffected by sodium bicarbonate feeding.

Depletion of Alkaline Bases.

It will thus be seen that a fixed base such as sodium is required to carry CO_2 to the lungs, and also to enable the kidney to excrete acids. Failing the fixed base, the kidney does use ammonia to enable it to continue working, but if the sodium is depleted CO_2 cannot be carried to the lungs, although oxygen is carried to the tissues—hence the dyspnœa without cyanosis that occurs in some cases of acidosis such as that seen in diabetes. Thus one finds that the essential of acidosis is the depletion of the alkaline bases.

In health the taking of 5 grammes (roughly the equivalent of 75 gr. or 1¼ drachms) of sodium bicarbonate by the mouth is followed by some being excreted at once, as the tissues have already got their full complement; hence, urine alkaline to litmus is excreted within a few hours. In disease, if the alkalies are depleted, the excess of sodium goes into store in the tissues, and so the urine remains acid after over 5 g. of sodium bicarbonate have been taken by the mouth. It has been pointed out that one of the proofs that it goes into store is that once the urine has been made alkaline by a big dose, and then again becomes acid, it can once more be made alkaline by a small dose in most cases. In diabetic patients the effect of the initial big dose is rapidly lost.

Sellards's Sodium Bicarbonate Test for Acidosis.

Sellards, working on cases of nephritis following Asiatic cholera, proved that sodium bicarbonate, when injected in large doses into a patient with acidosis: (1) was not excreted by the intestine in quantity, (2) did not accumulate in excess in the blood, and (3) could be excreted freely by a diseased kidney. He concluded that a tolerance to over 10 g. of sodium bicarbonate without the urine becoming alkaline forms a test for the presence of acidosis, which he defines as "an impoverishment of the blood and other tissues in fixed bases or in substances which readily give rise to fixed bases." To see the clinical value of this test it is useful to enumerate the methods by which the existence of acidosis has been demonstrated. These may be divided into laboratory tests and clinical methods.

Laboratory Methods.

1. *Examination of alveolar air for lowering of CO_2 tension.*—This is not especially difficult with the proper apparatus, but the tension is also lowered in cardiac and pulmonary diseases.

2. (*a*) *Examination of the blood for lowered CO_2 tension.*—This gives practically the same result as "1," but is more difficult. (*b*) *Examination of the blood for lowered alkalinity.*—(i.) By titration with phenol-phthalein after removal of the protein; (ii.) physico-chemically by measuring the increase of the hydrogen-ion content. Neither of these methods is really satisfactory, as the blood reaction is kept nearly constant at the expense of the reserve of alkalies, and no change in the hydrogen-ion content is demonstrable till the patient is moribund.

3. *Examination of the urine.*—(*a*) For excess of Na, K, Ca, and Mg salts of the normal and abnormal acids; (*b*) for other changes in the fixed bases; and (*c*) for increase in ammonia. All these involve chemical analysis and are not wholly reliable; for example, increase in ammonia occurs in cases of faulty protein metabolism and acetone, &c., in simple starvation.

Clinical Methods.

1. Dyspnœa characterised by deep respiration with prolonged expiration without cyanosis. This is only seen in very advanced cases.

2. The presence of a fruity smell in the patient's breath. This is chiefly seen in cases of faulty carbohydrate metabolism.

3. Increased tolerance to sodium bicarbonate.

Of the above six laboratory and clinical methods it seems that the bicarbonate test is demonstrable earlier than even the alveolar-air test and much sooner than the others become positive. Hence it appears that by the simple process of bicarbonate feeding we are able to prove the presence of acidosis sooner and more surely than by the most elaborate physico-chemical methods of the laboratory.

Bicarbonate Treatment of, and Test for, Pregnancy Toxæmia.

The question now arises as to how far the above facts can be usefully applied to the conditions that come before us in connexion with the toxæmias of pregnancy. Sellards appears to have paid but little attention to such cases; he worked almost entirely on nephritis and diabetes. As pregnancy toxæmias are commonly associated with more or less marked nephritis, it is important to note that uncomplicated cases of parenchymatous nephritis usually have a bicarbonate tolerance of under 10 g. Therefore, from a rough clinical point of view, it may be taken that, in a case of pregnancy toxæmia with a large bicarbonate tolerance, less than 10 g. need be deducted as possibly due to the nephritis, and the rest will represent about the measure of the acidosis due to co-existing lesions.

I have been interested in the subject of sodium bicarbonate in acidosis since the recovery of a patient apparently in diabetic coma, after an intravenous injection of a solution containing 20 drachms of bicarbonate. Subsequently, I have used it in most forms of pregnancy toxæmia as a method of treatment, but it is only in the last year that I have employed Sellards's method as a means of diagnosis and prognosis. The crude simplicity of the method is so extreme that one instinctively feels that there must be something wrong with it; but so far as my present experience goes it has apparently been a valuable guide. The patient is given measured quantities of sodium bicarbonate at fixed intervals, and her urine tested by litmus paper before each dose is given. The amount given when the litmus is first turned blue is noted, and further doses stopped till the urine is again acid. If there is ammoniacal cystitis the urine should be boiled in a test-tube to drive off ammonia before testing, or, less accurately, the litmus paper itself may be heated. I have found it safer to order it in drachm doses (as nurses are liable to make mistakes when working in grammes), and have

[1] Read at the Obstetrical Section of the Royal Society of Medicine on Dec. 2nd, 1920.

usually given 1 drachm in water every three or four hours. No complaint of gastric disturbances has been made. Some 50 toxæmic cases of various kinds have had their tolerance tried, but on going into their notes I found that most of them were useless to record, as, in addition to the fixed doses of bicarbonate, they had been given an indefinite quantity in barley-water to drink. They have therefore not been recorded.

Observation of Cases.

The following cases admitted to Queen Charlotte's Hospital have been under the observation of Dr. A. G. Howson, senior resident medical officer. The endeavour has been made to exclude patients who merely suffered from a transient albuminuria during labour and to include only those who had albuminuria before labour or other symptoms as well. It will be seen that the average quantity taken by mouth (exclusive of any quantity given per rectum and intravenously) in 15 cases is 45·3 g.

Table Giving Details of Cases of Pregnancy Toxæmia.

No.	Parity.	Clinical type.	Method of delivery.	Acetone or diacetic acid.	Result.	Sod. bicarb. in grammes.*
1	M.4	Albuminuria	Normal.	−	R.	32 (*a*)
2	P.	Eclampsia.	Cæsarean.	?	R.	64 (*b*)
3	M.3	,,	De Ribes's bag.	+	R.	40
4	P.	Albuminuria	Cæsarean.	−	R.	36
5	P.	Chronic nephritis.	,,	+	R.	28
6	P.	Albuminuria	,,	+	D. (P.)	120
7	P.	,,	Normal.	?	R.	16
8	P.	,,	Induction.	+	R.	72 (*c*)
9	P.	,,	Normal.	−	R.	32
10	P.	,,	Forceps.	+	R.	80
11	P.	,,	,,	+	R.	48
12	M.1	Chronic nephritis.	Normal.	−	R.	28
13	M.1	Eclampsia.	Cæsarean.	+	R.	72 (*d*)
14	M.1	Chronic nephritis.	Discharged undelivered.	−	R.	12 (*e*)
15	P.	Albuminuria	Forceps.	+	R.	16
					Average ...	45·3

R., recovery. D. (P.), died (pericarditis).

* Amount of sod. bicarb. in grammes given by mouth before urine alkaline: (*a*) + 48 in previous three days. (*b*) + Rectal glucose and bicarb. injections. (*c*) Still acid. (*d*) + 8 g. intravenously. (*e*) Subsequent normal delivery.

For purposes of comparison 13 normal cases were observed, and their urine was alkaline after an average of 6·8 g. We thus get the result that the average bicarbonate tolerance of patients clinically suffering from pregnancy toxæmias is 45·3 g., compared with the average bicarbonate tolerance of 6·7 g. in puerperal cases not suffering clinically from toxæmia. Further, the fatal cases had a tolerance of no less than 120 g., compared with an average tolerance of 40 g. on the part of those that recovered. If a rough attempt is made to gauge the severity of the clinical manifestations by the method of treatment adopted, it is found that the average tolerance of those on whom it was thought necessary to perform Cæsarean section or induction was 61·7 g., compared with 33 g. of those who were allowed to deliver themselves with or without the help of forceps. Three cases in the table are marked "nephritis." This indicates that the state of the retina, the character of the urine, or the history made it probable that albuminuria existed before pregnancy, although more urgent symptoms appeared before labour. It will be seen that their average tolerance is 23 g., or lower than the primarily toxæmic cases.

One other case may be given more fully.

In August, 1920, I saw a patient with severe vomiting and albuminuria at the sixth month of pregnancy. The vomiting was incessant, even of peptonised milk, and continued in spite of her removal to a home. She was extremely ill, but had not the usual appearance or mental state of a pregnancy toxæmia patient, so I postponed interference and tried her bicarbonate tolerance. Her urine became strongly alkaline after 12 g. had been taken, so it was again decided to watch her for a little longer. Two days later symptoms of bulbar paralysis appeared, which a neurologist diagnosed as of alcoholic origin, and it soon became obvious that she was suffering from acute alcoholic gastritis and nephritis. But for the aid given by the bicarbonate test it is probable that the case would have been regarded as one of pernicious vomiting with albuminuria.

It seems to me that by testing the tolerance to bicarbonate of soda in patients suffering from what is thought to be a toxæmia of pregnancy we have a method that is extremely simple and harmless. Further experience will prove whether it is of great or little value. The fact that it does not seem to have been generally tried on a large scale is my reason for bringing such a simple subject before you.

Treatment.

A brief summary of the treatment of patients suffering from acidosis may be added. Carbohydrate food is of the greatest value, and so these patients should not be put on a strict milk diet. An ounce of glucose may be given daily by the mouth or per rectum. A 2 per cent. solution of glucose has also been used intravenously. Laxatives are usually required. The deficiency in the fixed bases must be made up, and I have found Langdon Brown's mixture useful. It consists of a drachm of sod. bicarb., half a drachm of pot. cit., and five grains each of mag. carb. and calcium chloride given three times daily. Syrup of orange or other flavouring may be added as the mixture is rather unpleasant to taste. In more severe cases bicarbonate may be given in drachm doses every three hours, and rectal salines should contain bicarbonate instead of sodium chloride. It should be stopped when the urine remains alkaline. In urgent cases six drachms of bicarbonate in a pint of water may be injected into the veins and repeated every six hours while the urine remains acid. In sterilising a solution for intravenous use it should not be boiled for more than ten minutes, as sodium carbonate and hydrate tend to form; this occurs to a less degree if narrow-necked bottles are used, filled almost to the top, and stoppered soon after boiling if the solution is not to be used immediately. If an anæsthetic is required chloroform should not be used, as its administration in apparently healthy subjects is occasionally followed by symptoms of acidosis.

A NOTE ON THE ALBUMINURIA OF SMALL WHITE KIDNEY.

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THE following case of chronic nephritis is of great interest. The prolonged latent course of the disease, with slow development of arterio-sclerosis, terminal subacute uræmia, and absence of œdema, anæmia, headache, and dyspepsia, favour the presence of small white kidney. The patient was a robust, intelligent, well-developed young man of 25, first seen in November, 1916, on account of rejection by the military authorities on three occasions owing to albuminuria.

History.—His general health had always been good, but in 1907, when 16 years of age, after passing an examination for entrance into a bank, he was rejected on medical examination, and was informed that he showed a marked degree of albuminuria. This was confirmed by a general practitioner, who informed the relatives that the lad was suffering from a severe form of Bright's disease, which opinion was based on the degree of albuminuria only, for otherwise there was an entire absence of physical signs and symptoms, and general health appeared to be excellent. The past history was that he suffered from an acute attack of influenza at 1½ years, a severe attack of diphtheria at 7 years, and a mild attack of the same affection when 12 years of age. These diseases were apparently uncomplicated, for no œdema occurred at the time, and recovery appeared to be complete afterwards. Between 1907, when the albuminuria was first found, and 1916 he worked regularly as a clerk, later

becoming chief accountant to an important firm of millers, and appeared to perform the duties without any undue mental strain. General health was good, except for recurrent attacks of follicular tonsillitis on an average three times a year, when the urine would be examined on each occasion, and found to contain a large amount of albumin and always attributed to Bright's disease by his practitioner. No œdema occurred at the time of these attacks, and general health in the intervals was well maintained. His relatives had for some years observed that a little puffiness was present around the eyes in the early morning, but this passed off completely in an hour or so, whilst there never was any complaint of headache or dyspepsia. He was a life-long abstainer from alcoholic beverages, of careful habits, and had never suffered from gonorrhœa or syphilis. The family history showed that his father died at the age of 52 from bronchitis and emphysema, and one maternal uncle died suddenly at the age of 52 from angina pectoris. One sister suffered from acute nephritis at the age of 10, and appeared to have recovered completely until 15 years later, when albuminuria and œdema reappeared during pregnancy, to disappear completely afterwards.

Examination.—In November, 1916, the general state of development and nutrition was excellent, and but for a slight degree of nervous instability he was considerably above the average in intelligence and free from anæmia. Nothing abnormal was found on physical examination, except a rough systolic bruit, heard only in the dorsal posture over the præcordium and probably of exocardial origin. No cardio-vascular changes were otherwise evident beyond a systolic blood pressure of 160 mm. The fundus oculi was normal. The urine was of sp. gr. 1015, and on heating was almost solid with albumin, to the extent of 11 parts per 1000 (Esbach); the deposit contained some blood cells but no casts. The daily amount of urine was normal, and throughout there was no nocturnal micturition.

Diagnosis.—A provisional diagnosis of functional albuminuria was made in view of the long history, and in the complete absence of the usual manifestations of chronic nephritis. A reservation was made in favour of chronic nephritis on account of the degree of albuminuria and raised blood pressure.

Course of the Disease.

The patient reported himself at infrequent intervals, on an average three times a year, up to May, 1920, and general health was well maintained throughout. The urine always showed about the same degree of albuminuria, generally 10 parts per 1000, and deposit nothing of importance, and blood was not again seen after the first examination. No tonsillitis was present at the time of these examinations, and specimens of urine were submitted on many occasions apart from personal visits. The albuminuria appeared to be constant throughout the day and did not show any postural variation. From the time that he was first seen a modified proteid diet was adopted. A slight degree of thickening in the peripheral arteries was first noticed in 1918, whilst the blood pressure remained at about 160 mm. The fundus oculi was always examined and found to be normal. He gave up work in November, 1919, as he felt unequal to the strain which had been considerable during the years of war, but there was no apparent alteration in his general health. From 1907, when he was told that he suffered from Bright's disease, despite good health, he always had a lurking fear that some serious malady was present, and it was for this reason only that he gave up work with the intention of resuming after a prolonged holiday. His position for several years had been a most responsible one, and his services were much esteemed by his employers. In May, 1920, he complained for the first time of impaired vision. The general state was unaltered, but the peripheral arteries now showed distinct thickening, and the blood pressure had increased to 200 mm. The eyes were not examined on this occasion, as he was advised to see an ophthalmic surgeon, but he afterwards decided to defer this for a few weeks.

In view of the recent discussion on non-nephritic albuminuria at the Royal Society of Medicine, a specimen of urine out of a 24 hours' amount was sent for examination to Dr. R. L. Mackenzie Wallis, chemical pathologist to St. Bartholomew's Hospital, whose report was as follows:—

"A clear pale-coloured urine with very slight deposit and slight turbidity on standing. Reaction acid. Albumin present. Total protein 0·27 g. per cent. (Aufrecht). Globulin present. A distinct turbidity on adding acetic acid in the cold, and the presence of well-marked white rings on diluting with distilled water. Globulin ratio is 2 : 1. The protein present in the urine behaves just like that found in cases of globulinuria. It separates out in the form of a dense flocculent precipitate, giving the appearance of a urine containing very large quantities of protein; in fact, it seems to set almost solid on boiling.

Microscopically.—No casts, except a few of a pseudo-hyaline nature. No crystals or blood cells.

Diastatic activity.—10 units (normal). The normal diastase content indicates that there is no serious impairment of renal function. Calcium lactate was recommended for internal administration, and if unsatisfactory thyroid extract was also suggested."

Terminal Subacute Uræmia.

A more favourable prognosis was now given. However, a few days later he saw Mr. D. Leighton Davies, ophthalmic surgeon to King Edward Hospital, Cardiff, who found intense albuminuric retinitis, with hæmorrhages and œdema of the retina, and gave a grave prognosis.

Patient appeared to be in perfect health, but he was naturally upset by this report of the ophthalmic surgeon, the full significance of which was not disclosed to him. On July 17th he had a bilious attack, with vomiting of bilious material, which was repeated on the two following days, and a little blood was seen in the vomit on one occasion. Diarrhœa came on and continued up to the time of death 10 days later. The mouth and fauces were dry. The tongue was dry and swollen, and covered with brownish fur. The breath had a disagreeable odour, but there was no stomatitis. Vomiting became less on the 22nd and 23rd, and was absent afterwards. Dyspnœa was present from the onset, with cough and expectoration of a blood-stained mucoid material of moderate amount, with a slight degree of cyanosis, and accompanied by universal fine crepitant râles over both lungs. The heart impulse was diffuse and extended one and a half inches outside its normal position, with physical signs of dilatation of the left ventricle, but œdema was entirely absent and there was no enlargement of the liver and spleen. The pulse gradually failed, whilst the temperature was normal or subnormal throughout. The urine was of normal amount up to two days before death, when it became suppressed, and blood was present for several days before death. There was no complaint of nausea or of headache, but restlessness, sleeplessness, and hiccough were features throughout the terminal condition. Consciousness was fully preserved up to the time of death 10 days after the onset of symptoms. Convulsions and twitchings were absent throughout. No autopsy was obtained.

Striking Features of the Case.

(1) Prolonged latent course over a period of at least 13 years. (2) Intense degree of albuminuria throughout this period of time, with a high globulin content. (3) Absence of any evidence of postural albuminuria. (4) Preservation of good health and nutrition until the beginning of the terminal event, indicating that there was no evident impairment of renal function. (5) Entire absence of headache. (6) Digestion was perfectly performed until the onset of uræmia. (7) Slow progress of cardio-vascular changes of moderate degree with increased blood pressure. (8) Early onset of uræmia after the detection of albuminuric retinitis. (9) Uræmia of the subacute type with gastro-intestinal disturbance and pulmonary œdema.

Probable Presence of Small White Kidney.

The clinical features conform more closely to chronic nephritis of the small white kidney type as described by Sir John Rose Bradford in Allbutt and Rolleston's "System of Medicine," Vol. IV., Part 1. Although the type of uræmia was more that seen in chronic parenchymatous nephritis in contradistinction to the acute fulminating uræmia with epileptiform convulsions usually seen in cases of small white kidney, yet the prolonged latent course with the slow development of arterio-sclerosis, and the presence of albuminuric retinitis with hæmorrhages towards the close, and the entire absence of œdema, anæmia, headache, and dyspepsia are entirely unlike the usual course of chronic parenchymatous nephritis, and are much more in favour of the presence of small white kidney. Upon this assumption does not the report suggest that cases of small white kidney would be disclosed long before the

usual first and final manifestation of acute uræmia, if by any chance the subject of the disease presented himself for life insurance, or for entrance into the services, when probably the urine would be found to contain a considerable amount of albumin? The case throws little light upon the ætiology of the condition except, perhaps, to suggest that small white kidney arises from arterio-sclerosis, with particular incidence upon some part of the renal vascular apparatus induced by one or other of the acute specific fevers, recurrent tonsillitis, or from causes of congenital origin. Congenital cystic disease of the kidneys and syphilitic nephritis were carefully considered in the case under discussion and can be absolutely excluded.

Conclusion.

The case is of great importance from the standpoint of the insurance medical officer, for despite the failure of the tests for renal function to incriminate the kidneys in these latent cases of albuminuria, when the latter is constantly present in appreciable amount chronic nephritis probably exists. The publication of this case may stimulate further interest in a subject which of late has received considerable attention, and in which much valuable work has already been done. Without doubt, sooner or later, a complete record of the pathology and clinical course of small white kidney will be established.

I am much indebted to Dr. Mackenzie Wallis and to Mr. Leighton Davies for their reports; to Dr. J. Bowen Jones, of Cardiff, for permission to publish the particulars of the termination, and to Dr. George Grant, of Cardiff, for valuable information of the early history of the case.

THE DANISH TREATMENT OF SCABIES.

BY SVEND LOMHOLT, M.D.,

PHYSICIAN FOR DISEASES OF THE SKIN, ROYAL MARINE HOSPITAL, COPENHAGEN.

DURING the last ten years a form of scabies treatment with a new ointment has been brought into use in Denmark. It has proved so much of an advance upon all other treatments that it is now almost the only one in use all over this country. One single inunction suffices; after 24 hours the scabies is cured, and relapses are never seen. The cutaneous irritation is but slight. The treatment can very well be ambulant. It was first used in 1911 by Professor Ehlers in the hospital of the city of Copenhagen. The ointment was composed by Mr. Marcussen, at that time a chemist of the same hospital. Professor Ehlers made his first publication of the results obtained in 1912 in a Danish medical paper, *Ugeskrift for Læger*.

Method of Application.

In my department the application takes place as follows. The patient receives an ordinary cleansing bath, wipes himself thoroughly, and afterwards rubs the whole of his body, except the head, carefully with the ointment, which is almost of the consistency of butter. A nurse or another patient helps him with the back. The ointment must cover all the skin, but hard rubbing is neither required nor desirable. The patient ought then to wait for a quarter of an hour, to give the ointment time to get into the skin; after this he can go to bed. The next day at about the same hour he receives a second bath and fresh underclothing and the cure is finished. Meantime, all his clothes have been disinfected; I doubt, however, if this is absolutely necessary. All statistics seem to prove that this very simple treatment is as absolutely reliable as it is comfortable for the patient. But as statistics of scabies treatment in a civil population must, for obvious reasons, always remain incomplete in certain particulars, I think it of a special interest to study the results obtained with the treatment in the Danish Marine Hospital, in which hospital all scabies patients from the Danish navy have been treated since April, 1915. A possible relapse would hardly escape attention. In the period from April, 1915, to April, 1920, 678 cases were treated in the said way without a single relapse. Dermatitis was only observed in two patients, treated on the same day by some ill-prepared ointment which caused an alkaline cauterisation of the skin. One of these patients stayed 7, the other 21 days (see below). The detailed results of this period were as follows:—

Year.	Number of days in hospital.						
	1	2	3	4–6	7	21	Total.
1915	26	5	2	0	0	0	33
1916	67	12	4	1	0	0	84
1917	105	28	5	2	0	0	140
1918	250	36	2	0	1	1	290
1919	93	19	2	1	0		115
1920	15	0	1	0	0	0	16
Total	556	100	16	4	1	1	678

Briefly, a cure carried out in this way is absolutely reliable, rapid, comfortable, and cheap—the ointment required for an adult patient costing 3*s*. or 4*s*.

Preparation of the Ointment.

The preparation of the ointment is a little complicated, demanding a certain amount of care and practice to obtain a perfect result. The detailed technique of the preparation (Marcussen) is here given:—

(1) 1 kg. of sublimated sulphur is dissolved at a gentle heat in 2 kg. of a 50 per cent. solution of potassium hydroxide. This makes a clear, yellow solution.

(2) 225 g. of vaseline and 225 g. of water-free lanoline are carefully mixed, without heating.

(3) To this mixture 375 g. of the solution of sulphur in potash-lye mentioned above, is added.

(4) Fresh zinc hydroxide is prepared in mixing 28 g. $ZnSO_4$ and 40 g. 20 per cent. sodium hydroxide, and this is afterwards added to the ointment.

(5) Liquid paraffin is added to obtain a total weight of 1000 g.

(6) 5 g. of benzaldehyde is added to check the somewhat disagreeable smell of sulphuretted hydrogen.

The high sulphides of potassium are the capital element of the ointment, upon which its activity depends, a production of sulphuretted hydrogen taking place when the ointment is placed upon the skin.

Sarcopticide and other Properties of the Gas.

The sarcopticide power of this gas is very strong. If the hand of a scabies patient is brought into an atmosphere containing 25 per cent. of this gas, after ½–1 hour all the adult mites in the skin are killed. As could be expected, the eggs have considerably more resistance. Unfortunately, the resorption of the gas by the skin takes place rather rapidly; if the whole body, apart from the head, is brought into an atmosphere containing this percentage of sulphuretted hydrogen symptoms of intoxication appear after from 10 to 20 minutes, as I have experienced by exposing myself to this treatment, in the hope of finding in this way an absolutely clean and comfortable method of treatment. The unpleasant odour of the ointment is its only drawback; but this odour is not very persistent, and, moreover, after a few hours decreases to a minimum. Before undergoing the treatment, patients should remove from their persons and from the room all objects of copper, silver, &c., or the latter will be discoloured by the gas. The greatest advantage of the treatment is probably the fact that it is very suitable for ambulatory use. Under these circumstances the patient has to rub himself just before going to bed. In the morning he can wash his hands and carry out his daily work. The next evening he must give his hands a new treatment and take the final bath on the following morning, after 36 hours. With reference to disinfection, for most patients a change of underclothing and of bedsheets will suffice, but for poor patients a thorough disinfection must be recommended. At Copenhagen ample arrangements have been made along these lines for ambulatory treatment on a very large scale in out-patient departments, thus avoiding all treatment of scabies within the hospitals. It is quite free to all inhabitants, and is successful in every respect.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

SURGICAL TREATMENT OF MALIGNANT DISEASE OF THE COLON.

A MEETING of this society was held on Dec. 6th, Sir WILLIAM HALE-WHITE, the President, being in the chair, when Sir BERKELEY MOYNIHAN read a paper on this subject. He said that the surgeon was consulted in cases of growth in the colon almost invariably for one of two reasons—the presence of a tumour in the abdomen or the occurrence of some form of intestinal obstruction, subacute or acute; but there were generally symptoms which should lead at least to a suspicion of an affection of the colon before either of these events. These were (1) pain and discomfort, colicky in character, often following quickly upon meals, and giving a sense of great intestinal turmoil and of uneasy erratic exaggerated movement. The patient would not seldom say that the feeling conveyed to him was that of the urgent working of the bowel to overcome a difficulty, and that the effort appeared to be arrested at some place which he would indicate. This localisation of the site of obstruction was often accurate. Accompanying the pain were borborygmi, often extremely loud. (2) Intestinal irregularity, varying in character with the site of the growth. If the obstruction occurred in that part of the colon which is developed from the mid-gut—i.e., proximal to the middle of the transverse colon—the form of intestinal irregularity tended to diarrhœa; if the growth was in that part of the colon developed from the hind gut the irregularity tended to constipation. It was very rare to find constipation as a symptom of a growth of the right colon, and rare to find it absent in a growth of the left colon. The different consistence of the contents explained this condition. There was not infrequently a history in cases of left-sided malignant disease of "little attacks" of intestinal occlusion or difficulty extending over two, three, or four days, and overcome by drastic aperients or enemata. Among other signs of the presence of malignant disease of the colon were changes in the fæces, not only in their consistence, but in their constituents. When growth was present blood was commonly seen, and was probably always present if repeated careful search were made. Mucus in great excess was due to the inflammation of the mucosa always found above a growth. The passage of a motion consisting of pure blood had occasionally been the first warning of the presence of a growth. Anæmia was present, and was a striking feature in 20 per cent. of all colonic growths and in 50 per cent. of the growths of the ascending colon. The condition in severe cases approached that of pernicious anæmia, which he had known to be diagnosed in five patients upon whom he had operated later for the removal of a malignant growth. The tumour formed was often small and quite imperceptible unless the patient was thin or the growth involved an easily accessible portion of the gut. In many cases the tumour felt was due to the accumulation of hardened fæcal masses behind a growth. When the abdomen was examined to discover a tumour the bowel might be felt to distend and harden and then slowly to relax under the hand. Wherever the growth was placed the cæcum distended to a greater degree than any other part. So great might be its over-filling that rupture occurred even when the obstruction was in the lower part of the hind gut. With regard to radiological examination, the bismuth or barium meal gave little help. The barium enema sometimes showed a filling defect very similar to that seen in carcinoma of the stomach. This defect might be mimicked either by the presence of solid fæces in the intestine or of the accumulation of gas. Before the examination was begun the bowel must be cleared. The filling defect of carcinoma was distinguished by its constancy in position and in degree, and by the absence of any change in it under manipulation.

The pathological anatomy of colonic carcinoma indicated that it was slow in growth, remained long restricted to the intestinal wall, did not spread rapidly or largely in the primary glands, and even in fatal cases did not often cause metastases. In 112 autopsies on cases of carcinoma of the colon the following conditions were found by Haussmann. In 21 cases the disease had spread outside the bowel wall and had become generalised; in 36 the primary lymphatic glands were enlarged; in 55 cases the growth was limited to the gut. The growth did not extend widely in the wall of the intestine and the degree of "permeation," described by Sampson Handley, as a rule, was slight. Growths sometimes showed a tendency to spread into neighbouring tissues. In the ascending colon the muscles of the posterior abdominal wall might be invaded deeply and he had twice removed a part of the duodenum with the growth. In the descending colon the muscles, the kidney, more rarely the spleen might be invaded. Removal of the muscles in all these cases did not seem to add to the gravity of the operation nor to prejudice the chances of cure. In the transverse colon the growth might involve the stomach. When the growth was in the pelvic colon an adhesion might form to the small intestine and to the bladder or the pelvic organs in the female. A resection of a part or the whole of these viscera might be necessary.

Growths in the colon were low in the scale of malignancy, they did not spread widely or rapidly in or away from the bowel, their vascular and lymph vascular territories so closely corresponded that a free removal of glands could safely be made, wide resection was easy, and subsequent anastomoses were made without difficulty. The primary growth, its extensions in the intestinal wall, and all primary and secondary glands could therefore in most cases be removed in one block. He laid stress on the mobilisation of the colon as the first step in an operation. The amount to be removed was such that operations could now be standardised. If a growth appeared in any part of the colonic mid-gut the whole of that was removed. When the growth was in the distal part of the transverse colon or near the splenic flexure the left half of the transverse colon and almost the whole of the descending colon were removed after mobilisation. Growth in the descending colon necessitated its entire removal, and growth in any portion of the pelvic colon the removal of the greater part or the whole of this, with perhaps the termination of the descending colon. If the growth was in the middle of the transverse colon it was only necessary to excise widely.

Subsequent anastomosis of the bowel could be obtained by three methods: (1) end to end, (2) side to side, and (3) end to side. He never employed the end-to-side method. End-to-end apposition he regarded as quite satisfactory, and detailed his method of procedure. A side-to-side anastomosis, he said, was probably the safest for any but the very skilled operator, and it was just as satisfactory. After the anastomosis had been completed the question would arise as to whether the intestine should be opened at some point proximal to the new junction to give vent for a few days to flatus or liquid fæces. In recent years he had abandoned removing the appendix and inserting a small tube in the cæcum, and instead had stretched the anal sphincter.

Acute Obstruction.

Owing to the latency or lethargy of the clinical symptoms of cancer of the colon the patient might first be seen when an acute and complete occlusion had supervened. In such cases the first question was to decide whether the obstruction was in the large or small intestine. A careful and prolonged examination of the abdomen would almost always discover the truth, for the cæcum would be found or would not be found to harden perceptibly under one's hand, especially after a little provocation by firm intermittent pressure over the ascending colon. A barium enema, or the distension of the bowel by air injected into the rectum, followed by an X ray examination would help considerably. If the cæcum was palpable and distended the obstruction was in the colon. It was of the greatest importance to

decide this point, for a general exploration in cases of acute obstruction of the colon was a disastrous procedure, and a curative operation upon the cancer in such cases could never be performed except with the help of a greater good fortune than a surgeon had a right to expect. If the obstruction was in the small intestine a curative operation should almost always be attempted, and would frequently be successful. The plan which he always adopted in cases of obstruction in the colon was to perform typhlotomy as quietly and as simply as he could under a local anæsthetic, with a little morphine, atropine, and scopolamine given a short time before the operation. The overloaded colon emptied itself quickly, the patient recovered from the septic intoxication, and in about 10 to 20 days a second operation on a clean uninfected field could be undertaken. The typhlotomy was closed in two to three weeks after the resection.

Sir W. ARBUTHNOT LANE dealt in the first instance with the causation of cancer of the large bowel, showing that the factors determining its existence were there—namely, traumatism, a degenerative process in the tissues which is usually the result of intestinal auto-intoxication and less frequently of syphilis, and thirdly an unknown factor. He pointed out that the nature of the surgical interference must depend on a large number of conditions, such as the locality and extent of the growth, the condition of the intestine at the time of operation, especially as regards accumulated contents, the vitality of the individual, the invasion of adjacent viscera and abdominal wall, the presence of secondary growths, and many other important factors. He urged radical measures when possible as being frequently the most easy to perform (so increasing the chances of recovery), as reducing the risk of recurrence and as improving the health and happiness of the individual. His paper appeared in extenso in THE LANCET of last week.

Mr. GARNETT WRIGHT emphasised the importance of early diagnosis and said that cases of colonic growth were rarely seen by the surgeon before they had been greatly complicated by acute obstruction. Massive infiltration occurred in many cases where the operation was postponed. He had not found radiograms of much value in the early stages. Sigmoidoscopy was sometimes very helpful when the growth was in the lower part of the bowel. An exploratory operation should not be put off if a colonic growth was suspected. He favoured drainage as a preliminary measure in cases with acute obstruction, and held that under such circumstances an operation in two or three stages was safer than immediate resection. A sigmoid loop, however, could be resected immediately, even if acute obstruction was present, if Paul's tubes were tied in. He preferred this procedure to colotomy.

Mr. J. P. LOCKHART-MUMMERY said that it was generally agreed that cancer of the colon was one of the least malignant forms of cancer in the alimentary tract. It was the slowest to spread to surrounding structures, and when freely removed there was less danger of recurrence than with any other form of cancer of the intestinal epithelium. If cancer of the colon was to be successfully treated it was most important that the surgeon should get the case at an early stage, and therefore early diagnosis was of the utmost importance, and should be made before the obstruction had occurred and before there was a palpable tumour in the abdomen. The most valuable method he considered to be the sigmoidoscope, which generally enabled one to detect a growth in the sigmoid flexure (the commonest situation), to ascertain the exact position of the growth, and, if necessary, to remove a portion for microscopic examination; moreover, the method was not open to error. Another important method was bimanual examination under deep anæsthesia. A third method, especially useful when the growth was in the higher parts of the colon, was examination by the X rays during the introduction of an opaque enema into the bowel. Although it could not be relied upon to exclude or to detect a growth in the colon it sometimes gave valuable confirmatory evidence of the presence of such a growth and should never be omitted in doubtful cases. He believed it to be far superior to a bismuth meal photograph in these particular cases. Early diagnosis was so important that he did not hesitate to advise an exploratory laparotomy where symptoms were suspicious and no confirmation could be obtained by the above methods. He insisted on the importance of not excluding the presence of a tumour in the colon on X ray evidence. This might give valuable positive information, but as negative evidence was useless. Even a positive finding should only be taken as confirmatory to other evidence. The question of operation fell under two headings: (1) resection of the growth with immediate anastomosis, and (2) the three-stage method, sometimes known as Paul's operation. The former was the ideal method, and the growth should be removed as widely as practicable, with as much as possible of the lymphatic area in the neighbourhood. The amount of tissue that could be removed must vary with almost every case, the important points to bear in mind being that the bowel left behind must be long enough to enable a proper anastomosis to be performed, and that in removing the lymphatic area the blood-supply to the distal portion of the bowel be not injured. He preferred end-to-end anastomosis, and had had excellent results, and thought that the risk was no greater than that of a side-to-side or end-to-side anastomosis. The three-stage method was not ideal in theory, but was useful in some cases. There were many patients who had to be operated upon for cancer of the colon who were either very bad subjects for operation or very fat. To resect a growth in the sigmoid in a very stout person and perform an anastomosis was a practical impossibility. In other words, the choice in many cases lay between the three-stage method and doing nothing at all. In his own practice he had only performed this method in cases where it had been quite impossible to perform immediate resection and anastomosis. There were 11 such cases in his series, and of these 2 were alive and well seven years later, and 1 was alive and well three and a half years later. Out of a total of 36 patients with carcinoma of the colon the growth was resected in 23 cases, in which there were 3 deaths, 1 occurring when the intussusception method was used to anastomose the bowel, 3 when there was obstruction present and the three-stage method was used, and 1 when resection with end-to-end anastomosis was performed. Of the 18 patients from whom the growth was resected, 6 were known to have died of recurrence—4 within a year, 1 two years later, and 1 three and a half years later. Of the remaining 12 cases 1 was well two years later, 2 were well three years later, 1 was well three and a half years later, 1 five years later, 3 seven years later (one of these died of recurrence eight years after operation), 3 cases had been operated upon too recently to know the result, and 1 case was untraceable.

Mr. H. W. CARSON said that the outstanding feature in the surgery of cancer of the colon was the complication of obstruction. In 111 cases which he had investigated for this review he found that 68 (62 per cent.) were in the iliac or pelvic colon, of which 50 per cent. were obstructed, 18 (16 per cent.) were in the cæcum or ascending colon, of which 33 per cent. were obstructed, 9 (8 per cent.) were in the transverse colon, of which 6 (66 per cent.) were obstructed, 9 (8 per cent.) in the descending colon, of which 7 (77·7 per cent.) were obstructed and 6 (5·4 per cent.) were in the splenic flexure, of which all were obstructed. This showed that the right colon growths, second in frequency to ileo-pelvic colon growths, were much less liable than any other to be obstructed, while the splenic flexure and descending colon growths, though relatively infrequent, were obstructed in about 90 per cent. For the whole series the incidence of obstruction was 53 per cent. That these cases came late for treatment was seen by the fact that an attempt at radical cure was only possible in 35 per cent. That obstruction had a marked effect on the death-rate was proved by a comparison of the mortality of 58 per cent. in obstructed against 28 per cent. in non-obstructed, and even in the cases where the only operation possible was the formation of an artificial anus the mortality

was 55 per cent. The only chance of getting better results was to obtain earlier recourse to treatment, but the early symptoms of large intestine obstruction were not such as to cause the patient to consult his doctor. A strong appeal might be made that medical men confronted with a middle-aged patient who suffered from increasing constipation and occasional abdominal pain and flatulence should make every effort to exclude cancer of the colon before instituting a course of treatment. It was not always possible to find a tumour on examination, but frequently recurring or residual intestinal distension in a middle-aged person, especially if accompanied by loss of weight and pain, should demand a rectal examination and even an exploratory operation. Many lives would be prolonged if more exploratory operations were done.

Treatment if Obstructed but Operable.

If acute or chronic obstruction were present no one-stage radical operation (resection and anastomosis) must be attempted. This statement might be open to question in cases of ileo-cæcal or ascending colon growths. Ascending colon growths caused obstruction comparatively rarely, but growths in the ileo-cæcal region almost always caused obstruction, and he had done immediate block resections in these cases with the best results. But in any other of the seven common sites for growths an immediate radical cure must not be done. Two courses were open to us: (1) we could operate at once, and (2) we could try to overcome the obstruction before operating. Knowing that some of these obstructions were due to blocking of the narrowed lumen by fæcal masses or by a passing œdema of the mucosa above the obstruction, and knowing that an obstruction in the colon had not the urgent toxic effect of a small intestine obstruction, he was inclined, in cases where there was no urgent symptom, to try the effect of morphia, oil enemata, and other injections, with stoppage of food by the mouth for quite a short period, bearing in mind the fact that a perforation of the cæcum might take place in long-standing cases. The tongue was the best indication of the need for drainage. If we operated there were three things to do: (1) a cæcostomy; (2) a colostomy above the obstruction; and (3) the Mickulicz method of delivering the growth through the wound, cutting it away and tying Paul's tubes into the upper and lower end. Of these he considered cæcostomy to be the best of all. The operation was generally easy and quick, the fæcal fistula was well away from the subsequent enterectomy area, the growth was not disturbed, so that new adhesions were not formed, and the cæcostomy acted as an admirable safety vent to prevent gas retention behind the suture line after the radical operation. The method he recommended was a medial exploration below the umbilicus in cases where the diagnosis or the site of obstruction was doubtful, closure of this incision and cæcostomy, radical cure in three weeks' time with retention of the cæcostomy, closure of the cæcostomy. Having discussed the technique of resection, Mr. Carson suggested the following as the appropriate treatment in inoperable growths.

Of the ileo-cæcal valve: Ileo-ascending colostomy.

Of the cæcum and ascending colon: Ileo-colostomy ascending or transverse with appendicostomy.

Of the hepatic flexure: Ileo-transverse colostomy, unilateral exclusion, with drainage proximal to growth, or cæco-transverse colostomy.

Of the transverse colon: Bilateral exclusion with end-to-end colo-colostomy and drainage of excluded portion.

Of splenic flexure and descending colon: Transverse colon-sigmoid anastomosis or transverse colostomy.

Of sigmoid and pelvic colon: Inguinal or transverse colostomy.

He had kept in touch with his radical cures as far as possible and knew that 60 per cent. were well four years later, two cases had recurrence after the fourth year, while one case was still living 12 years after operation.

Mr. G. GREY TURNER said that he had been able to watch the evolution of the treatment of malignant bowel growths, and it had been a very valuable experience. In the earlier days—18 to 20 years ago—the operations were not usually undertaken until obstruction was well developed. The surgeon then commonly made an exploratory incision, and through this the growth was palpated without the guidance of the eye, which was usually engaged in examining the details of the ceiling. If, fortunately, the growth could easily be withdrawn from the abdomen, resection was carried out there and then and an anastomosis made in one stage, the bowel perforce being sutured in its distended and septic condition. The results were very bad, and operative interference, except for the mere relief of obstruction, was discouraged. All this was now changed; the results as to immediate recovery were very good and the remote results were encouraging. Let us consider what principles underlay this great change. First we must place the recognition of the baneful effects of obstruction, which added just so much increased risk as peritonitis in appendicitis or jaundice in gall-stone disease. It was still a very frequent complication, and in his series of 112 cases no less than 47 were admitted suffering from this complication. But the practice was now different, and some type of drainage operation was carried out in the first instance, the examination and possibly the removal of the growth being undertaken at a second sitting. Secondly, surgeons recognised the importance of the examination of the growth under the guidance of the eye. Thus scrutinised, the fixity was often seen to be due to inflammatory complications rather than to the actual infiltration of the neighbouring parts by an extension of the growth, and, in fact, was often largely due to anatomical dispositions which could be dealt with and the growth freed. Thirdly, and as a corollary to the last point, operators found that nearly all growths can be mobilised in such a way as to allow of their being brought up into the incision and usually outside the abdomen. This plan had greatly facilitated removal and had been of immense importance, not only in rendering the operation easier and safer, but in extending its scope and by increasing the range of operability. As a fourth principle he would add the provision of a safety valve in the form of an opening into the bowel above the anastomosis and usually in the cæcum. This did away with the fear of gas tension and prevented fæcal masses being forced through the newly made juncture. Of course, these principles had been recognised for long enough, and had been taught in the writings of Moynihan, Mayo, Hartmann, Rutherford Morison, and others. With regard to the question of obstruction, he was sure that it was better to err on the side of making a preliminary intestinal drain rather too often than to risk distended and sodden bowel at the site chosen for resection. If this latter state of affairs was encountered it was better to adopt the method of Paul and to leave the question of anastomosis for a subsequent sitting. But this latter plan, though sometimes extremely useful, was not ideal, and it was difficult to carry out a removal which conformed to the requirements of a modern cancer operation. Therefore it was better to make some type of preliminary enterostomy rather too often than otherwise. To carry out these operations required an adequate exposure, and surgeons were often hampered by too small or ill-chosen incisions. For growths in the cæcum or ascending colon the oblique or transverse muscle-cutting incision of Rutherford Morison in the right iliac fossa afforded an excellent exposure and was exceedingly useful. The same type of incision on the left side was admirable for fixed growths in the descending or iliac colon. For all other growths a mid-line incision with a cross cut if necessary fulfilled the requirements. To the criteria for success already mentioned he would like to add the wisdom of a rubber tissue drain from the site of the anastomosis in some cases. It never did harm and might be a very useful safeguard. These operations for bowel growths had now nearly all been standardised and ought to be deliberate consecutive proceedings. There were many small technical points which might bear on success, but they were not matters of fundamental importance. For instance, he himself had a preference for end-to-end anastomosis, which he now believed to be the best, but he would not hesitate to adopt any method which fulfilled the indications in any particular case. He always liked to satisfy himself about the blood-supply of the bowel at the cut edge, either by seeing the vessels pulsate or by

feeling them. Many surgeons cut the bowel with the cautery, but this always seemed to him to be unnecessary, as no one would go so near to the growth as to run the risk of leaving fragments, but he thought it was really important to use the cautery either to cut or to sear the cut surfaces of the tissues containing the lymphatic vessels. These technical matters, however, were largely settled, and we could be most helpful by concentrating on the question of diagnosis. The cases which reached the surgeon were nearly all advanced, and to get them earlier we must attach more importance to recurring colics, intestinal disturbance, and abnormal stools in those of middle age. Examination by the ordinary methods, and especially just after or during an attack, might furnish most valuable information, and repeated examination in the varying conditions of bowel distension was most important. The sigmoidoscope and the opaque enema were valuable aids to diagnosis, but bismuth meals were not of much value for this purpose. There was a tendency to despise the makeshift operations, and if this was an expression among surgeons of a divine discontent with anything short of excision, then it was a healthy sign indeed. But the results of short circuiting and even of colotomy were often surprisingly good, and these operations should always be carried out when more radical methods were not possible. Even palliative excision was sometimes very successful, and he showed a specimen illustrating its usefulness. Mr. Grey Turner also showed several beautiful specimens which he had brought down from Newcastle, and which illustrated the subject under discussion.

Mr. F. HERNAMAN-JOHNSON, referring to X ray diagnosis, spoke of peritoneal inflation by oxygen as promising hopeful results. Treatment by X rays in inoperable carcinoma reduced pain and might prolong life for some months.

Mr. JOCELYN SWAN said that he had obtained greater advantage in diagnosis from bismuth or barium enemata than from an opaque meal. If the colon were resected he thought side-to-side anastomosis the safer method of uniting the bowel. Cæcostomy should be done in all cases whether the obstruction were acute or chronic, and in the latter event he preferred to do this operation three weeks before.

ROYAL SOCIETY OF MEDICINE.

SECTION OF LARYNGOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this Section of the Royal Society of Medicine was held on Dec. 3rd, with Dr. JOBSON HORNE, the President, in the chair.

Dentigerous Cyst Following Injury.

Dr. DOUGLAS GUTHRIE showed this specimen, which was removed from a boy aged 8 years, who, seven months before coming to hospital, had his upper lip forcibly struck by a drinking-cup. A few weeks later there was a swelling on the right side of the face which had gradually increased. When seen it was painless, smooth, and sharply circumscribed, and a parchment sensation was communicated on palpation. At the operation the cyst was found to house the crown of a tooth. Recovery was uneventful. The interesting features were its probably traumatic origin, the relative rarity of such cysts in the upper jaw, and the completeness of the specimen.—Mr. E. D. DAVIS had not found opening dental cysts through the nose a satisfactory procedure; it was better to deal with them from above. The general opinion did not associate these cysts with trauma; they were regarded as due to failure of a tooth to erupt. In regard to their rarity in the upper jaw, he thought there was confusion of them in this respect with epithelial odontomes.

Abscess of Frontal Sinus.

Mr. ARCHER RYLAND showed a boy, aged 15, who attended hospital complaining of nasal stuffiness, and occasional aching pain in the forehead. There were nasal polyps at each middle meatal region, but there was no frontal swelling. In July the nasal polyps were removed, and in September he reappeared with a frontal swelling, stating he had a similar one before attending in July, but it had subsided on the discharge of "mattery" fluid from the nose. On incising through the skin pus was evacuated. In places the periosteum was stripped up, and was œdematous, and there was a fistula through the anterior wall of the left frontal sinus. The section showed septic granulation tissue, but no evidence of cyst.

Case of Laryngocele.

Dr. FREDERICK SPICER showed an organist, aged 68, who was sent to hospital for gradually increasing deafness, and then hoarseness was detected. He stated that one night, after getting very wet in the snow, he had severe croup and violent coughing. He became hoarse from that moment, and had so remained ever since. His doctor declared the larynx was now exactly as he saw it 20 years ago. On quiet respiration the right cord looked normal, but the left one was swollen and discoloured, and its anterior fourth was covered by a fold of mucous membrane. The left ventricular band was reddened, thickened, and corrugated, but no obstruction to the passage of air was obvious. On phonation a smooth, globular swelling appeared, looking like mucous membrane enclosing air. It commenced to get full from the anterior part of the ventricle, and when completely distended it filled the left ventricle, covered the opposite cord, and blocked the air-way.—Dr. W. HILL regarded it as a diverticulum from the ventricle of the larynx. In some of the lower animals, for instance, the "howling monkey," laryngoceles were normal structures; a large pouch proceeded from the ventricle of each larynx through the thyro-hyoid membrane and thence into the axillæ, and action on this extemporised bagpipe resulted in the howl. Probably this case in the human subject was unique. Perhaps there was some congenital weakness at the spot to have allowed the condition to result from violent coughing.—Dr. IRWIN MOORE gave particulars from literature of a number of similar cases in human subjects, and indicated the views of their exhibitors as to causation, and how they were dealt with. Those which were not regarded as congenital were said to have resulted from trauma.—Sir STCLAIR THOMSON did not think there was such a condition as prolapse of the ventricle; he thought with Dr. Hill that this case was unique.—Several members discussed the case.

Congenital Web of the Larynx.

Dr. WORTHINGTON showed a patient, aged 10, with a web of the larynx which had been present since birth.—Dr. H. J. BANKS-DAVIS urged the removal of the web, as its presence interfered with the development of the larynx, which might remain infantile in type. The application of the cautery might prevent its return. Various suggestions for dealing with it were offered.

Fixation of Arytenoids in an Osteo-arthritic Patient.

Mr. A. J. HUTCHISON showed a lady, aged 48, who had suffered from a crippling osteo-arthritis for 15 years. During the past 18 months stridor was produced by only slight exertion, and her voice varied from a hoarse whisper to a squeak. The arytenoids were fixed close together, and were swollen and red. The only septic focus discovered was pyorrhœa alveolaris, and improvement set in after the extraction of twelve teeth. Now the appearance of the arytenoids was almost normal, the voice was good, and she could walk over a mile.

Division, during Thyroidectomy, of Both Recurrent Laryngeal Nerves.

Based upon patients shown by Dr. DAN MCKENZIE and Mr. T. B. LAYTON, a discussion took place on the accidental severence or serious wounding of recurrent nerves during thyroid operations, and Mr. HOWARTH gave an illuminating demonstration on the ease with which such a result ensued during such operations, using an actual specimen for the purpose.—A good deal of confirmation was forthcoming from various speakers.

Bony Enlargement of One Side of Face.

Dr. W. H. KELSON and Mr. LAYTON showed cases of this condition, and in the discussion importance was attributed to septic absorption in the bones concerned.

SECTION OF OPHTHALMOLOGY.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this section of the Royal Society of Medicine was held on Dec. 10th, Dr. JAMES TAYLOR, the President, being in the chair.

Leontiasis Ossea with Optic Atrophy.

Mr. N. BISHOP HARMAN showed a girl the subject of Unilateral Leontiasis Ossea, accompanied with Optic Atrophy. She had been under observation 2½ years, but the only noticeable change was a slight proptosis of the right eye. The optic atrophy was definitely on the increase, and the sight had now practically gone. The bone was very dense.—Mr. E. H. E. STACK (Bristol) said that 20 years ago he had a remarkable case of leontiasis ossea which affected the whole head, having been coming on during 21 years. At the autopsy it was curious that none of the foramina at the base of the skull were even slightly affected, although the skull vault and the face were greatly involved in the bossy leontiasis. At one spot the bone was 3 inches thick. There seemed to have been no interference with the functions of the brain or nerves at all. Death took place from diphtheria, and during her numerous visits to the out-patient department she had been regarded as a case of hydrocephalus. The head had latterly become so heavy that she had to support it with her hands.—The PRESIDENT mentioned a case of the condition in a gentleman he saw about 12 years ago, who came to London each year to get a larger hat. He was deformed in other ways too. He had no headache or optic atrophy. He thought the latter must be an unusual complication.

A New Scotometer.

Mr. BISHOP HARMAN also showed a New Direct-record Scotometer, whose merits were speed and accuracy. The record was made by carbon paper, and the hand of the observer was enclosed in a bag to prevent the patient following its movements. Several observations made at different times could be recorded on the same chart. The chart gave 26° laterally and 17° vertically. Dr. Gordon Holmes had previously introduced a direct-record scotometer, but he used a pin-pricker.

Mr. BISHOP HARMAN exhibited at the same time a frame with an unilateral vertical adjustment for use in connexion with hyperphoria.

Mr. W. H. MCMULLEN showed and demonstrated a Dr. Peters's Campimeter. The obvious criticism, he said, was the very short working distance; and it was not wise for the field marked out to be in the view of the patient, as it was here.

Leprosy Involving the Conjunctiva.

Mr. H. NEAME showed a patient with this rare condition, the last recorded cases of which in this country were shown by Mr. Treacher Collins before the Ophthalmological Society in 1909. They were in a father and son, aged 45 and 15 years, of Polish nationality. The father had left Poland 20 years before, and had not noticed anything wrong with himself until five years previously; the boy was much more severely affected. In the present case there was a nodular condition of the conjunctiva, most marked immediately around the cornea. The conjunctiva was raised up and there was some œdema. The nodules from the skin swarmed with lepra bacilli, as also did a nasal ulcer. The patient had had eight injections of sodium morrhuate, without any apparent effect; there was no reaction. Then injections of sodium chaulmoograte were given, and the fourth caused a marked reaction. This was the treatment carried out by Sir Leonard Rogers, who said that 50 per cent. of the cases of leprosy of three years' standing and less recovered, leaving no bacteriological sign behind. The cases which had lasted a period of from 3 to 15 years showed 25 per cent. of recoveries. What appeared to happen was, that in forming their capsule the bacilli absorbed the chaulmoograte, which proved toxic to them.—Mr. TREACHER COLLINS spoke of the three cases of the kind he had seen and described the appearances. He alluded to the ease with which the nature of the condition was recognised.—Mr. M. S. MAYOU also referred to the ease with which the diagnosis could be made. The nasal mucous membrane seemed to be nearly always involved, and a smear preparation showed the bacilli in considerable quantity. There was no need to excise a piece of conjunctiva for the purpose.—Mr. GRAY CLEGG spoke of the rapid way in which sodium morrhuate cleared up tuberculous iritis.—Mr. H. M. TRAQUAIR mentioned the rarity of ocular complications in cases of leprosy.—Mr. LESLIE PATON also discussed the condition, and Mr. NEAME replied.

Implantation Cyst of the Iris.

Mr. M. L. HINE showed a woman who had had an Implantation Cyst of the Iris 12 years. In 1908 she attended hospital with a penetrating wound at the limbus of the left eye due to a blow on the eye. She had iridectomy done. A few months later she returned with a pearly-looking cyst along the lower margin of the coloboma. He first saw her seven years after the cyst had been noted. Her vision in that eye was now, with small cylinder correction, 6/6, and she was experiencing no trouble from it, nor had it apparently increased in size. Therefore, as the tension of the eye was normal he did not propose to do anything.

Mr. MCMULLEN showed a similar kind of case, in which there was a history of injury eight years ago. He did not think it was possible to say, from the appearance of these cases, whether the condition was epithelial or endothelial. He deprecated attempts at removal in cases in which the eye was quiet, as they were doomed to failure.

Mr. MAYOU said he had had two cases, not his own, to examine from the pathological department. In one of them the anterior wall of the cyst was removed in the ordinary way with iris forceps and scissors, and the cyst collapsed, but two fresh ones formed where the two edges of the old cyst fell together. They were removed, but the patient developed a bad irido-cyclitis and left the hospital against the wishes of the surgeon. Eventually sympathetic trouble developed in the other eye and she was nearly blind. Much the same sequence occurred in the other case too.

SOCIETY OF MEDICAL OFFICERS OF HEALTH:

TUBERCULOSIS GROUP.

AN ordinary general meeting of the Tuberculosis Group of this society was held at 1, Upper Montague-street, London, on Dec. 10th, Professor E. L. COLLIS in the chair, when Dr. S. VERE PEARSON delivered an address on

Sanatorium Treatment: Its Present Position.

The essentials in sanatorium treatment, he said, are an ample but not uncomfortable supply of fresh air, good and sufficient food, attention to the details of personal hygiene, rest during the active stages of the disease, regulation of exercise, the inculcation of a hopeful spirit, and the avoidance of surgical or other methods of intervention or treatment unless they are of proven efficacy, are properly applied, and are directly helpful in the attainment of the above aims. Fresh-air methods should be applied with discretion and moderation, some hospitals known to the lecturer almost entirely excluding air, while others admit too much. So with exercise. Walther, of Nordrach, used to say that the two chief causes of death from tuberculosis were first, the patients walked into their own graves, and second, the interference of fussy relatives. The advantage of institutional over domiciliary treatment was that the patient was taken away from the often embarrassing and disheartening home conditions and placed under skilled attention when a more thorough investigation of his case could be made, that he was encouraged by the presence of others travelling the same road, and was enabled to acquire habits of personal hygiene which would not only be useful for himself afterwards, but

would have an educative effect on others. But in all essentials treatment in a sanatorium and in the home are the same. When properly carried out it is the only method of cure which we at present possess. It is impossible to reserve sanatorium treatment for early cases alone, as these cases are very difficult to diagnose, even when circumstances seem unusually favourable in this respect. Thus he had had recently under his care six medical men, not one of whom could be considered to be in the early stage of the disease. The sanatorium should be regarded as a centre both for research and for teaching. In Norway, for example, the expenses of medical men are paid to enable them to attend sanatoriums and learn at first hand the methods of treatment in vogue. If students could take more advantage of these institutions they would learn to rely less on physical signs in diagnosis and study more carefully the early symptoms in the spirit of Sir James Mackenzie's teaching. The occupational treatment of such a chronic disease as tuberculosis should only be countenanced when the patient is well advanced towards cure, always bearing in mind, however, the necessity of preventing ennui. Nevertheless, it may justly be said that if a patient is fit enough for an occupation he is fit enough to stop paying expensive fees for his maintenance in an institution. After touching upon the relatively small cost of converting army huts into suitable shelters as compared with that incurred by building more substantial structures, the lecturer suggested that the number of beds required for sanatorium treatment to-day might probably be taken as twice the average of yearly notifications, say, 160,000.

Discussion.

The discussion which followed the reading of the paper was opened by the CHAIRMAN, who considered that occupational treatment should be carried out in the convalescent stages of other diseases, since recovery was frequently hampered without it. Many patients have to resume work before they are fit to do so, and if they could have work provided for them for a few hours in the day, to be paid for at the trade-union rate of wages and have, in addition, half their sickness benefit allowed, the results would be extremely beneficial, as patients cannot be expected to take much interest in work for which they are not paid. As it is hardly possible for any single sanatorium to teach or carry on all occupations, particular sanatoriums would specialise in certain trades, and patients belonging to these trades would naturally gravitate there.—Dr. MARCUS PATERSON considered the chief advantage in sending the patient to a sanatorium lay in separation from home influences, and the best type to send away was that which offered the best chance of recovery whatever the stage. Occupational treatment of the sort suggested could only be properly carried out at a training-centre, and the difficulty peculiar to London was that 25 per cent. of the patients were clerks.—Dr. H. A. ELLIS thought that fresh air, apart from being in movement, was of no importance, and might even be disadvantageous when moisture-laden. The fact that 60 per cent. of notified cases died within six months of notification would lessen considerably the number of beds required in sanatoriums, say to 120,000.—Dr. F. J. C. BLACKMORE suggested that automatic lathe work might not be too heavy for the majority of patients.—Dr. P. W. EDWARDS thought there was too much fresh air in the country and that arrangements should always be made for heating sanatoriums.—Dr. C. G. WELCH called attention to the depressing effect produced on patients and others by the *föhn*, or south wind, in Switzerland.—Dr. F. G. CALEY thought many people derived little benefit from treatment in the sanatorium because they were unable to stay sufficiently long, and hence their relatives should be subsidised in some form or other. The difficulty in diagnosing the disease in its early stages was due not only to the fact that patients did not go to a medical man early enough, but that physical examination is very uncertain, and many cases were of a fulminating type and died within a few months of onset.—Dr. Pearson was accorded a hearty vote of thanks for his paper.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

THE ordinary quarterly meeting of this association was held in the Medical Society's rooms on Nov. 25th, under the presidency of Dr. W. F. MENZIES.

The PRESIDENT regretfully announced the death of Dr. T. G. Dickson of Buxton and Dr. Ant. Ritti of Paris, who had been an honorary member since 1903.

Dr. W. ROBINSON read a paper on

The Future of Service Patients in Asylums.

Dr. Robinson furnished an account of the unfortunate class of case whose mental alienation, stated and considered to be due to war service, had been such as to necessitate certification and prolonged detention in mental hospitals. He believed the public only imperfectly appreciated the true factors in the causation of the mental alienation; the varieties of the psychosis, or the prognosis. During the war, and since, the number of Service patients under detention in a certain asylum had increased in a gradual manner, and a record had been compiled of 140 such cases. After an experience in France he believed that a large proportion of the soldiers who manifested psychic disturbances were potential psychopaths before the war. Once in the army such people cause trouble. Patients were met with who, suffering from insanity, were invalided to England, to again turn up at some hospital abroad with a recurrent attack. Cases of general paralysis were frequently encountered, and the confusion associated with them was ill-understood or misinterpreted. In 1917–18, when more men for fighting were urgently needed, many men, who up till then had been performing simple duties, were drafted to fighting units; often the mental state was not considered, and the abnormal stress of training, perhaps of fighting too, yielded a further harvest of mental cases. He proceeded to give an analysis of the 140 cases under review. Of 30 cases not exposed to actual shell fire there was hereditary instability in 12 cases, mental instability in 23. Two had previously been insane, 4 had been in civil prisons, in 10 the mental trouble had occurred at adolescence, alcoholic excess was present in 16, and 11 had syphilis. Among cases who had had foreign service at the front there was hereditary instability in 24 and mental instability in 50.

Dr. Robinson divided the varieties of psychoses encountered in these patients under the heads amentia and dementia. By the former term he meant the mental condition of patients with deficient neuronic development; and by dementia he meant the condition of patients suffering from permanent psychic disability based upon neuronic degeneration. Seventy-five of the cases were aments, 65 were dements. With regard to the great majority of the cases under discussion the prognosis in regard to recovery he regarded as very bad.

In view of the suggested changes in legislation in reference to treatment of incipient cases and the probable discontent of relatives, he thought the following points ought to be emphasised. A large percentage of Service patients had been sent to asylums only after prolonged treatment in military hospitals. These were not patients curable by suggestion, psychotherapeutic conversations, hypnotism, or psycho-analysis. As a class the war-service patients had replaced the pre-war class of chronic asylum patients. Many of these patients would have been asylum patients probably, sooner or later, if there had been no war.

The contribution, for which the author was cordially thanked, was discussed by Dr. HUBERT BOND, Dr. J. R. LORD, Colonel E. W. WHITE, Dr. T. S. GOOD, Dr. J. STEWART, and the PRESIDENT, and Dr. ROBINSON replied.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

A MEETING was held on Dec. 7th at the School of Medicine for Women, Hunter-street, W.C. In the absence of Mrs. FLEMING, M.D., the chair was taken by Dr. AMY SHEPPARD.

Injuries and Diseases of the Eye.

Dr. MARGARET DOBSON showed slides of drawings from cases of Injuries and Diseases of the Eye. These drawings were made by herself when working in Malta and Egypt during the war. The series comprised drawings of encapsuled foreign body in eye, detachment of retina, rupture of choroid, retinal and subhyaloid hæmorrhages, syphilitic retinitis, disseminated choroiditis, senile macular atrophy, &c. There was an interesting contrast pointed out by the lecturer between two cases of injury to the eye. In the one the patient had received a gunshot wound of the eye; fundal

examination showed two linear scars in the macular region and X rays revealed the presence of two air-gun pellets embedded in the orbital fat in its upper and inner part. In the other the cause of injury was concussion from the explosion of a bomb at a distance of a quarter of a mile. This had led to retinal and vitreous hæmorrhages. In the first case vision was 6/18, the second case was blind. A case of subhyaloid hæmorrhage was shown where the drawing was made within half an hour of the onset of blurring of vision. A vessel in the centre of the macular region could be seen bleeding, and below it a half moon-shaped collection of blood effused between retina and hyaloid membrane of vitreous. This had occurred in the course of a recurrent attack of benign tertian malaria and was followed by complete recovery of vision. Dr. Dobson also demonstrated four cases of Progressive Myopia, a serious affection of the eye which follows such debilitating diseases as measles and pneumonia. Antero-posterior lengthening of the eyeball is brought about by a squeezing by the muscles of accommodation of the coats of the eye which have become softened by malnutrition.

In the subsequent discussion appreciation was expressed of the skill and energy shown by Dr. Dobson in her careful records of this interesting series of cases.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this society was held on Dec. 9th, Dr. J. E. GEMMELL, the President, being in the chair.

Dr. E. W. HOPE read a note on the

Development of the Scheme for the Diagnosis and Treatment of Venereal Disease in Liverpool.

He pointed out that in 1919 5929 new cases of V.D., of whom 918 were females, were treated at the Liverpool V.D. clinics. In 1920 up to date, and with a proportionate allowance until Dec. 31st, the figures were: new cases, 5476 males, 1071 females. He further stated that some 60 per cent. of all cases discontinued treatment while still suffering from the disease, and that patients may leave hospitals or workhouses while in an infective state. He proceeded to discuss what further measures might be adopted to control the spread of the disease, and read the following proposals taken from a Bill to be submitted to Parliament by the corporation for the furtherance of the public health:—

(1) To impose a penalty on any infected person knowingly imparting venereal disease to any other person, or knowingly committing any act likely to cause the infection of any other person.

(2) To require persons suffering from venereal disease to consult a registered medical practitioner, and to require the infected person to continue treatment until in the view of the practitioner he requires no further treatment.

(3) To remove to hospital or suitable place provided by the corporation any person undergoing treatment for venereal disease who is about to leave any gaol, asylum, hospital, reformatory, workhouse, or other kindred institution, and to detain such person so long as such person is suffering from venereal disease in a communicable form.

(4) To provide that parents and guardians shall obtain treatment for children or mentally defectives who are infected with venereal diseases.

(5) To enable the corporation, with the approval of the Ministry of Health, to supply all forms and certificates required by registered medical practitioners, and define fees payable for services rendered.

(6) To confer on registered medical practitioners certain powers and duties subject to the approval of the Ministry of Health, such as to inform the patient of the nature of his illness (see Clause 2), and to enable the corporation to make such arrangements as will allow treatment to be free of charge to the infected person.

He invited discussion of these proposals and the support of the Medical Institution, pointing out that though legislation as to V.D. might be difficult, reasonable and real attempts should be made to safeguard the innocent and control the sufferer.

A resolution, moved by Dr. R. W. MACKENNA, seconded by Dr. MARY H. F. IVENS, and carried with only one dissentient, proposed:—

"That this meeting of the Liverpool Medical Institution supports the proposals submitted to obtain further Parliamentary powers with a view to ensure continuity of treatment and the prevention of venereal disease"

Dr. EDMUND HUGHES read a paper on

Some Characters Associated with Congenital Syphilis,

derived from personal clinical study over 18 years. He said that the search after phenomena of congenital syphilis could be carried on either statically, by attempting to determine whether the subject of a given sign or symptom was syphilitic, or dynamically, by studying the after-history of known syphilitic individuals. The latter method, though more laborious, he considered more instructive. The typical Hutchinsonian deformity was rare in the temporary set of teeth, but a less rare occurrence affording corroborative evidence in doubtful cases was an even crescentic erosion in the free edge of an upper central incisor. It might begin three months after eruption, or later on, and extend to the upper laterals requiring two years for its completion. After considering the condition of certain veins of the scalp in cranial syphilis, Dr. Hughes discussed the incidence of craniotabes. This was almost universally regarded as restricted to infancy, but in 68 instances he had found it in the fœtus near or at term, vertex presenting. In 32 instances, craniotabes had occurred in infancy; in 113 born without it, it had occurred later in 10. Craniotabes was more often than not a fœtal event, with a later infantile recurrence, probably made possible by a degree of prenatal atrophy in the posterior parietal segment, unrecognisable at birth. Infantile craniotabes was not separable into two varieties, as these forms could pass one into the other in the same individual. The close association of syphilis with craniotabes, as with rickets, might be deceptive. Craniotabes followed its own course, with indifference to the severity and treatment of an accompanying syphilis, which might be supposed to act non-specifically by impairing the biochemical mechanism serving ossification. The inference followed that craniotabes was a mono-sign of rickets, and he suggested that the comparative immunity from stresses and strains in the long bones enjoyed by the fœtus might explain the rarity of other rachitic changes at this early period.

MANCHESTER MEDICAL SOCIETY.

A JOINT meeting with the members of the Liverpool Medical Institution was held at the Manchester University on Nov. 17th, at 5 P.M., with Professor R. B. WILD, the President, in the chair.

Dr. J. HILL ABRAM read a note on

Excess of Normal Cerebro-spinal Fluid.

After stating his view of what should be called excessive he described some cases. He suggested two explanations of the condition: (1) that it was an expression of an infection of the choroid plexus with actual meningitis, and (2) that it was also caused by toxæmic conditions in infective diseases. He emphasised the importance of lumbar puncture in the latter diseases when indications arose.

Mr. K. W. MONSARRAT read a communication entitled

Is Cholecystectomy the Normal Operation in Cholecystitis?

He discussed the physiology and the comparative anatomy of the gall-bladder, and maintained that the theory that it was designed to act as a reservoir for bile was still the only one tenable; he pointed out, however, that owing to the human dietetic habits its functionable value in man was negligible. He considered that all infections of the biliary channels tended to persist in the gall-bladder owing to its anatomical structure as a narrow-necked diverticulum, and that recurrent symptoms after cholecystostomy were in most instances caused by the persistence of infection in the gall-bladder. He maintained that in cholecystectomy there was clinically a smaller risk than in cholecystostomy, and that whether the cholecystitis were acute or chronic, removal of the gall-bladder should be considered the normal procedure.

Hour-glass Stomach.

Mr. C. THURSTAN HOLLAND read a paper on the Hour-glass Stomach from the X ray point of view, based upon 151 cases. His analysis showed the condition, when due to simple ulcer, to be common in women, rare in men. The chief points of interest were this relative frequency in females, the difficulty of clinical diagnosis, and the relationship to malignant disease. Mr. Holland considered that all the evidence obtained from analysis of the cases—the X ray findings, the operations performed—73 in number, and the after-history, went to show that gastric ulcer was not commonly a predisposing cause of gastric carcinoma.

Mr. W. THELWALL THOMAS dealt with a consecutive series of 50 cases of hour-glass deformity of the stomach operated upon within 13 years. He noted that 46 occurred in women, 4 in men, the long duration of symptoms, chiefly pain and vomiting, extending over an average period of nine years. Hæmatemesis was rare and severe only in one case; diagnosis was impossible without radiographic examination. Despite the very long history of symptoms suggesting ulceration malignant disease had not supervened in a single case. He drew attention to the impossibility of knowing beforehand the type of operation that would prove necessary in any given case until after opening the abdomen, and emphasised the need for employing all our resources to combat the shock in these emaciated semi-starved patients. Gastroplasty, gastro-gastrostomy—all the known varieties of gastro-enterostomy and even an unusual type of gastro-duodenostomy had been resorted to as well as partial gastrectomy. There was no condition in the abdomen that could call for such a diversity of operative procedures. Seven deaths were recorded, three from broncho-pneumonia. It had been possible to trace all cases except three and the reports had been highly satisfactory in all but six, and the complaints of these had been slight and really insignificant. The results had been good quite irrespective of type of operation so long as a passage for food had been efficiently provided.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

CHORION-EPITHELIOMA.

A MEETING of this society was held at Sheffield on Nov. 19th, Mr. MILES H. PHILLIPS, the President, being in the chair.

The PRESIDENT described a case of Chorion-Epithelioma of the Ovary. The patient, aged 25 years, was first seen in May, 1920. She had had one child two years previously, but no miscarriages. Menstruation was regular till January, 1920, when she had a flooding attack lasting 14 days after six weeks' amenorrhœa. Severe pain accompanied this attack, but only lasted half an hour. A similar attack of pain occurred five weeks later. In March, 1920, there was another loss which she considered to be an ordinary period. From this time there was amenorrhœa. The patient stated on May 25th that she had noticed an abdominal swelling for a month; she had also suffered from daily nausea and vomiting and occasional frequency of micturition. She did not look ill and there was no breast change. A central elastic tumour occupied the abdomen and reached nearly to the umbilicus. No souffle or fœtal heart sounds were audible. On vaginal examination the uterus was of normal size and pushed forward by a nodular mass continuous with the abdominal tumour. As the history suggested an ectopic gestation and the tumour was apparently an ovarian one, a diagnosis of ovarian pregnancy was made and the patient admitted for operation. On opening the abdomen, an irregular hæmorrhagic tumour was found rising up from the pelvis behind the uterus and covered by adherent omentum. The tumour occupied the position of the right ovary, the right tube being stretched over its anterior surface. There was considerable infiltration of neighbouring structures and the growth was separated from these with great difficulty. The appearances were so strongly suggestive of chorion-epithelioma that it was considered advisable to remove the body of the uterus and left appendage although apparently healthy. No metastatic growths were found in the liver or other parts of the abdomen. The patient made a good recovery and left hospital at the end of the fourth week, but she had recently developed a rapid recurrence in the pelvis. The tumour was ovoid in shape and measured 8 by 5 by 5 inches. On section it was dark and hæmorrhagic in appearance and microscopically showed all the characteristic cells of chorion-epithelioma. Chorion-epithelioma of the ovary was a very rare condition and he had only been able to trace five other cases recorded in the literature.

Dr. J. CHISHOLM (Sheffield) read a paper reviewing 13 cases of Chorion-Epithelioma admitted to the Jessop Hospital since 1908. Of these, four had occurred during the present year. The primary growth was uterine in 10 cases, tubal in 2, and ovarian in 1. The age-incidence varied from 21 to 43 years; half the cases occurred before the thirty-fifth year. Excluding the tubal and ovarian cases, vesicular mole had preceded in 50 per cent. The interval between the last pregnancy and the first observed symptom of chorion-epithelioma was variable but no interval occurred in those cases following vesicular mole, the hæmorrhage being continuous. Where the growth was tubal or ovarian the symptoms closely resembled those of ectopic pregnancy. In uterine cases, bleeding was always the first symptom. Pain, when present, occurred later and was usually of no great severity. Vomiting sometimes occurred, and in one case, where it was severe, free blood was present in the abdomen from perforation of the uterine wall by growth. Hæmoptysis was present in 2 cases, in 1 slight and disappearing after operation, in the other more severe, due to secondary deposits in the lungs. In 10 cases a tumour of varying size was noted on abdominal examination. This was median in position, soft and tender, and closely simulating the pregnant uterus. Twelve patients were operated on, the remaining one being too far advanced for any treatment. The after-history of those submitted to operation was as follows: Died, 2 cases (one shortly after operation from bronchial trouble, one in a year from recurrence); alive and in good health, 7 cases (operation over 10 years ago in 2, over three years ago in 3 cases); alive but growth has recurred, 1 case (ovarian); not traced, 2 cases.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting held on Dec. 2nd Mr. J. W. THOMSON WALKER read a paper on

PRE-OPERATIVE TREATMENT OF ENLARGED PROSTATE.

The greater had been his experience gained in prostatectomy, the more he had been impressed by the fact that many of the complications of prostatectomy were preventable by pre-operative treatment. While there were complications against which no provision could give immunity, we could prevent or avoid some of the bowel and kidney and many other complications by careful pre-operative examination and treatment. He drew attention to gastro-intestinal, pulmonary, circulatory, nervous, and urinary risks, and gave appropriate treatment of each, pre-operative and post-operative. In discussing the question of operation as opposed to catheter life with patients he advised consideration of the following points: 1. Enlargement of the prostate is a progressive disease, the rate of increase of which we cannot foretell. 2. As the prostate enlarges the patient grows older, and is less able to withstand the effect of uræmia or sepsis or the effects of a severe operation. 3. When the symptoms become acute much damage has already been done to the kidneys, and, although improvement may follow operation, much of the damage is permanent. 4. Some adenomatous prostates become malignant. 5. The mortality of catheter life is higher than that of prostatectomy. 6. A very large proportion of the cases of enlarged prostate treated by catheter are forced eventually to undergo operation, and many of the deaths after prostatectomy are due to the sepsis caused by pre-operative catheterisation or to back pressure and renal inefficiency due to delay in submitting to operation.

Mr. Thomson Walker then described his operation devised to obviate post-operative obstruction.

ULSTER MEDICAL SOCIETY.

A MEETING of this society was held on Dec. 2nd, Dr. T. HOUSTON, the President, being in the chair.

Dr. W. J. WILSON opened a discussion on

PRESENT-DAY PROBLEMS IN PUBLIC HEALTH.

This subject was, he said, of such wide range that it would only be possible to indicate the nature of some of the problems whose solution would affect every member of the audience. Public health legislation in the past had been mainly concerned with improvement of environment, but was now more directed towards the welfare of individuals. Recent enactments emphasised the fact that preventive and curative medicine could not be dissociated, and that the medical practitioner was the pivot on which the future preventive medicine would revolve. He described the chief provisions of the Ministry of Health Act, 1919, pointing out the advantages of having a Minister in the Cabinet responsible for public health with a permanent medical secretary thoroughly competent to advise the Minister, to whom he had constant access. Quite as important was the establishment of a Consultative Council, composed of representatives of every branch of medicine. He then dealt with the interim report of the English Consultative Council on Medical and Allied Services, and gave an account of the suggested primary and secondary health centres, showing that the proposals would enable the doctor in practice to take an active part in the communal services. He claimed that for the enforcement of the sanitary statutes and for administration whole-time medical officers were required, but that in questions mainly concerned with personal and domestic hygiene the general practitioner could render valuable aid, and that he was the best of all health visitors. Concluding, the speaker urged that, in view of the probable establishment of a Parliament in Ulster, it behoved Ulster practitioners to organise and to see to it that any scheme for the prevention and treatment of disease should have their imprimatur.

Dr. J. D. WILLIAMSON, chairman of the Public Health Committee of the Belfast Corporation, gave some particulars regarding the future policy of that committee, and advocated the abolition of the union infirmaries.—Professor R. J. JOHNSTONE dissented from the recommendations of the English Consultative Council, being strongly of opinion that there should be a separation between preventive and curative medicine, and that the former should be in the hands of State-paid full-time medical men.—Dr. H. W. BAILIE, public health officer of the Belfast Corporation, complained of the apathy of the public regarding the problems of public health.—Dr. W. BURNS emphasised the dangers of an impure milk-supply.—Dr. A. GARDNER ROBB hoped the medical profession would secure adequate and well-chosen representation in the new Ulster Parliament.

Mr. A. B. MITCHELL moved, and Dr. ANDREW TRIMBLE, principal tuberculosis officer of Belfast, seconded, a resolution urging the Belfast corporation to put into force without delay the necessary machinery for securing the medical inspection of school children.—The motion was carried unanimously.—On the motion of Dr. H. L. MCKISACK, seconded by Mr. A. FULLERTON, it was decided to form a Public Health Committee of the Ulster Medical Society.

The feeling of the meeting was clearly a determination that when Ulster gets local self-government a strong effort should be made to promote an active and progressive policy in the Department of Public Health for the province, and that such policy should be guided by medical opinion.

Reviews and Notices of Books.

ARTERIO-SCLEROSIS AND HYPERTENSION.

With chapters on Blood Pressure. Third revised edition. By LOUIS M. WARFIELD, A.B., M.D., (Johns Hopkins) F.A.C.P., formerly Professor of Clinical Medicine, Marquette University Medical School; Chief Physician to Milwaukee County Hospital. London: Henry Kimpton and Co., Ltd. 1920. Pp. 266. 24*s*.

SINCE the publication of the last edition of this book many workers have attempted by various means to produce experimental arterio-sclerosis in animals. No finality appears yet to have been reached, some affirming and some denying that arterial changes have resulted from the many procedures adopted. The difficulty experienced by experimenters is not surprising when the character of the changes is considered. Arterio-sclerosis is not an acute process, but one in which the morbid changes are of slow development. Then, too, there is the further stumbling block that even in young animals arterio-sclerotic changes may spontaneously arise. An excellent account of these experimental results is provided in the chapter dealing with the Pathology of Arterio-sclerosis. In the chapter devoted to a Consideration of the Physiology of the Circulation, several different forms of sphygmomanometer are described and figured, and the technique of their use clearly indicated. The writer emphasises the importance of the diastolic pressure being estimated as well as the systolic. The systolic pressure represents the maximum force of the heart at the time the observation is made. To start the blood in motion the heart must overcome a dead weight equal to the sum of all the forces keeping the aortic valves closed. This sum of factors, spoken of as peripheral resistance, must be exceeded by the force of the ventricular contraction before one drop of blood is set in motion along the aorta. The diastolic pressure is a measure of this peripheral resistance. Both the auscultatory and the maximum oscillation methods of determining the diastolic pressure are described. The pulse pressure, which is the difference between the systolic and diastolic pressures, represents the force driving the blood onwards from the heart to the periphery. From this determination important indications of the condition of the vaso-motor system, of the driving power of the heart, and, indirectly, of the state of the myocardium can be obtained.

The importance of the early recognition of arterio-sclerosis is emphasised, and the writer boldly avows that just as dentists require their patients to return to them at stated intervals to see that all is well, so the public should be instructed that all persons over 40 years of age should attend their medical attendant twice yearly for the purpose of a physical examination. Only by this means is the prophylaxis of arterio-sclerosis possible. "Of what use is it," he adds, "to save the teeth and lose the body?" A useful chapter is the one devoted to Treatment. The writer urges the necessity of absolute rest in bed in dealing with cases of acute high arterial tension. Absolute rest must take the first place, but valuable adjuncts are to be found in venesection, hot packs, and free purgation. Another chapter is devoted to the subject of Arterio-sclerosis in its Relation to Life Insurance.

The book is written in a telling manner, and epigram and aphorism are freely employed to drive home the lesson. A final quotation must suffice: "Many a man owes a debt of gratitude to the life insurance examiner. He rarely feels grateful."

SOME CONCLUSIONS ON CANCER.

By CHARLES CREIGHTON, M.D. London: Williams and Norgate. 1920. With 114 illustrations. Pp. 366. 42*s*.

THIS volume represents the results of many years of study in the laboratory and the library by one whose high reputation in other branches of medical science is generally acknowledged. It is an earnest attempt to solve a vital and most difficult problem, and as such is entitled to serious consideration. Nevertheless, Dr. Creighton's views are so far removed from the doctrines of modern pathology as to be beyond the range of effective criticism.

Briefly, his conception of cancer is that of a complex process in which the blood plays a predominating part, though the actual mode of formation of the tumour cells varies in different types of growths. In chorion-epithelioma, for example, fœtal epithelial cells are supposed to produce a ferment which acts upon the maternal red blood corpuscles, reducing them to an assimilable pabulum; upon this pabulum leucocytes, endothelial, and other cells feed, being thereby converted into malignant elements. In the malignant tumours of the eyeball, the so-called gliosarcoma and the melanoma, plasma cells and chromatophores are at fault, for they feed upon the blood instead of functioning normally as blood carriers or storers. This perverted metabolism results in a profound change in the cells which now take on malignant characters and form the actual constituents of the tumours. Of mouse cancers it is stated that the developing and expanding mamma feeds upon the blood which has deteriorated from prolonged inbreeding, building up a blood gland structure, the tumour, instead of a secreting structure. Similar conclusions are arrived at for tumours of the skin, tongue, rectum, stomach, and breast, and are supported by a mass of observations and by copious references to the literature, though it must be admitted that the author's favourite authorities worked and wrote in the Victorian age.

Every page of Dr. Creighton's book contains highly controversial matter, and the following extracts show how widely his ideas of pathological processes differ from those generally current.

"I possess evidence, from a medico-legal post-mortem, that even the blood of the fœtus, effused accidentally in puncturing the membranes, can act septically on the uterine tissues and juices so as to produce infective thrombosis and general septicæmia" (p. 55).

"..... a case of phthisis florida, due undoubtedly to an extreme degree of the alcoholic dyscrasia. ..... The incidence of the alcoholism was not at all upon the liver, but on the lungs. The air cells are everywhere occupied by extravasated blood. Their endothelial lining, perhaps also leucocytes, are distended to large spheres, some of which are the so-called dust cells. Inclusion of whole red discs can be seen in many of them beyond doubt. By that pabulum epithelioids arise everywhere, which combine to form the whitish tubercular structure which is found in all cases of caseous disintegration. I assume bacilli, although I did not stain for them. But the case was one of alcoholic phthisis, if ever there was such a case. The dyscrasia of the blood was due to alcohol; and the hæmorrhagic and phagocytic phenomena were due to the dyscrasia" (p. 111).

We have not attempted to discuss the minor points in which we differ from the author, though they are innumerable, but it must, we think, be obvious that his work can only stand if the whole of the laborious researches of recent years can be shown to rest upon a foundation of fantasies.

HYGIENE.

By W. WILSON JAMESON, M.A., M.D., M.R.C.P., D.P.H. Lond., and F. T. MARCHANT, M.R.San.I. London: J. and A. Churchill. 1920. With 18 illustrations. Pp. 404. 18*s*.

THIS little book, which is one of the "Students' Synopsis Series," is intended for those studying for a diploma in public health. There exist already many excellent works on hygiene, but the present volume, which comprises a carefully edited collection of notes used by the authors for teaching purposes at University College, London, has been prepared with a view to facilitating revision of the subject prior to examination. Though the information is presented in concentrated form, it is clear and lucid and contains references to the results of the most recent work on the subject. The book is divided into 11 sections relating to the following subjects: (1) water-supplies; (2) removal and treatment of waste matters; (3) air, ventilation, heating, and lighting; (4) soils and building construction; (5) food; (6) infantile mortality, maternity and child welfare, school hygiene; (7) control and prevention of disease, industrial diseases; (8) statistics; (9) sanitary law; (10) meteorology, physics, and calculations; (11) notes on chemistry. A list of standard text-books is also included and there are

numerous references to current literature in the text. In the treatment of such a wide range of subjects it would be surprising to find no error, more especially in the first edition of a book. We note that on p. 162 the authors state that: "Thorough vaccination means three or four marks, each half an inch square." It would, of course, be difficult to obtain such large marks on an infant's arm, nor is this at all necessary, because if the total area of the three or four marks taken together reached half a square inch the vaccination could be regarded as efficient. In the instructions to public vaccinators issued by the Local Government Board it is stated: "The total area of vesiculation resulting from the vaccination should not be less than half a square inch."

The authors have produced an excellent epitome of the more important facts relating to hygiene which can confidently be recommended to students preparing for the public health examinations and to all others interested in the subject.

THE PSYCHOLOGY OF DREAMS.

By WILLIAM S. WALSH, M.D. London: Kegan Paul, Trench, Trübner and Co. 1920. Pp. 361. 12*s*. 6*d*.

"THIS volume," says the author, "was written with the interests of the general reader particularly in mind; for this reason the subject matter has been treated in a more or less popular style." It is marked by exceptional sanity of treatment, and contains a temperate account of the psycho-analytic work on the subject. It includes chapters upon dreams as wishes, prophetic dreams, nightmares, somnambulism, the analysis of dreams and day-dreams. It is admirably adapted for the purpose for which it was written, and will also prove of considerable interest to the general medical public despite its inevitable superficiality.

A DICTIONARY OF SCIENTIFIC TERMS.

By I. F. HENDERSON, M.A., and W. D. HENDERSON, M.A., B.Sc., Ph.D., F.R.S.E. London and Edinburgh: Oliver and Boyd. 1920. Pp. 354. 18*s*.

THE compilation of this volume was undertaken in order to make available to scientists and students an up-to-date work somewhat on the lines of Stormonth's "Manual of Scientific Terms" (1879, republished 1903). It contains definitions of about 10,000 terms, and is stated to include several hundred lately coined expressions which have not hitherto appeared in any dictionary. The subjects include biology, anatomy, botany, zoology, embryology, cytology, and physiology, with some reference to bacteriology and palæontology.

ATLAS UND GRUNDRISS DER BAKTERIOLOGIE.

Sixth edition. By Professor K. B. LEHMANN and Professor R. O. NEUMANN. München: J. F. Lehmann. 1920. 2 Vols. Pp. 847. M.60.

THE sixth edition of this well-known book, which has been of great value to working bacteriologists since its original publication in 1896, is a reprint of the fifth edition, together with 70 pages of new matter dealing with the advances made in bacteriological science since 1911. The book is well printed and there are but few errors of type; the binding is inferior to previous editions and the price is higher. The addendum dealing with recent work in bacteriology is the most interesting section. German work appears over-emphasised to the neglect of foreign research. Occasionally the authors are unfair in their summaries of work done. Thus the leptospira of Weil's disease is described under the name Spirochæte icterogenes, and Uhlenhuth and Fromme are given credit for the discovery of the organism. The work of Inada is barely referred to, and the identity of Inada's organism with that described by Uhlenhuth is questioned. Perhaps this may be put down to the dislocation of international communication during the war. The section dealing with filtrable viruses contains no reference to the filtrable virus of chicken sarcomata discovered by Rous. But, apart from these defects and setting aside the neglect of the work of foreign bacteriologists, the book is one of the most useful text-books of bacteriology in any language.

HOSPITAL PHARMACOPŒIAS.

The Pharmacopœia of the London Hospital. Compiled by F. A. HOCKING, B.Sc. Lond. Under the direction of a Committee appointed by the London Hospital Medical Council. London: School Press. 1920. Pp. 247.

Manchester Children's Hospital Pharmacopœia. Manchester: Chas. Sever. 1920. Pp. 58. 2*s*. 6*d*.

A NEW edition of the Pharmacopœia of the London Hospital has been prepared. This formulary contains, in addition to the usual subject matter of its class, a good section on antidotes and certain extracts from the British Pharmacopœia; thus the doses, synonyms, and solubilities of official substances are given, together with a list of the official and London Hospital preparations into the composition of which each substance enters. The official galenicals are also briefly dealt with, the dose and some indication of the composition and strength being given in each case. As a result the volume includes a useful epitome of the British Pharmacopœia. When one glances through a series of hospital pharmacopœias the need for greater uniformity in the Latin nomenclature of certain classes of organic substances becomes obvious, more particularly in the interest of students. Menthol serves as an example; the British Pharmacopœia has "emplastrum menthol," in the compilation under review we see "linimentum mentho," while other London pharmacopœias give, say, "guttæ mentholis." In such a case it would seem preferable to follow the lead given by the compilers of the official volume.

In the Pharmacopœia of the Manchester Children's Hospital we have a useful collection of formulæ, to which are appended a list of doses, tables of metric and imperial equivalents, and other memoranda. The formulæ are based on sound principles, but a little more care might have been expended in setting them out, even if the names of ingredients are not written in full.

ROGER BACON.

The Father of Experimental Science. By H. STANLEY REDGROVE, F.C.S. London: William Rider and Son. 1920. Pp. 64. 1*s*. 6*d*.

THE appearance of this little work is timely, as it practically coincides with the publication of Fasc. V. of the hitherto unpublished works of Bacon, which are in process of issue by the Clarendon Press. Fasc. V. contains the Secretum Secretorum. Mr. Redgrove gives a short account of Bacon's life, dealing with his many trials and difficulties, together with a brief account of his Opus Majus and his treatise De Retardandis Senectutis Accidentibus. In view of the popular interest which Professor Eugene Steinach's researches have aroused, it would be worth while for some scholar to re-edit the translation of this treatise by Dr. Richard Browne, which appeared in 1683 and was reprinted by Sir J. Sinclair in 1806. It is good to see how after years of oblivion, or if not oblivion, being held in mind only as a magician, Bacon is coming into his own. For the general reader, besides Mr. Redgrove's interesting little book, the chapter on Bacon in Mr. Osborn Taylor's The Mediæval Mind may be confidently recommended.

SYMBIOSIS.

By H. REINHEIMER. London: Headley Bros. 1920. Pp. 295. 15*s*.

THE main conclusion which the author wishes to enforce is that "the normal relations between organisms, more particularly those having regard to food, involve, quite indispensably, a stupendous amount of systematic biological reciprocity, so that upon all organisms, be they high or low in the scale of life, there devolve definite duties and obligations, on pain of degeneration or destruction—viz., to contribute in their several ways to the welfare of the organic family as a whole." Useful work, he says, coupled with the principle of live and let live, has been and is the most potent law of progress. Darwin himself used the term "struggle for existence" in a very general sense to include coöpera-

tion as well as competition, but the latter aspect has, without doubt, come to be dominant in general thought, and it has seemed to many that a tyrannous and brutal warfare is the basis of all progress. Mr. Reinheimer would have us look at the other aspect: symbiosis, mutual helpfulness, means elevation and progress; antisymbiotic plundering means stagnation and degeneration. It is a pleasant and cheering outlook on the world, and at the moment probably productive if only because it has been neglected. But the author, having stated his thesis plainly enough, does little or nothing more to persuade us of its truth. Most of the book is a disorderly mass of writing, in which it is difficult or impossible to trace any lines of clear exposition; it deteriorates as it proceeds, and is hardly worth serious study beyond the first three chapters. It is nearly a hundred years ago that the Earl of Bridgewater left £8000 "to write, print and publish 1000 copies of a work on the power, wisdom, and goodness of God as manifested in the creation," as the advertisement of the Bridgewater Treatises has it. With the wealth of material that has since accumulated there is ample room for a modern synthetic examination of the sympathetic coöperation which seems to rule in the live world. L. J. Henderson's "Fitness of the Environment" indicates what could be done. But Mr. Reinheimer has made poor use of his opportunity.

PRACTICAL PHYSIOLOGICAL CHEMISTRY.

Sixth Edition. By SYDNEY W. COLE, M.A. Cambridge: W. Heffer and Sons, Ltd. 1920. Pp. xvi. + 405. 16*s*.

THE appearance of a sixth edition of Cole's "Practical Physiological Chemistry" about a year later than the last one is the best testimony to its appreciation by students and research workers and to its great value. This edition is a revision with several important alterations and additions. In particular, we must notice that the author has himself modified and improved the micro-method of determining glucose in blood; in his experience the Maclean method was not well suited for the student, and gave good results only in the hands of experienced and skilled workers. But micro-methods are generally held to be more difficult to carry out and to require more constant attention in their manipulation; unless skill has been previously obtained with the ordinary method, it scarcely seems that the best way of teaching is the specialisation in this difficult technique. Moreover, experimental error is better balanced in the ordinary procedure, and, though this takes longer, several analyses can usually be performed together, and there is little ultimate saving in time by the use of micro-methods, though there is certainly saving in reagents. It is good practice, too, for students to have two or more simple operations running concurrently; micro-methods are more valuable for the post-graduate worker. The hypobromite method of estimating urea, omitted in the last edition, is now again included, though its accuracy is not as great as is desired. It is the only method in which a result is reached in a very short time. Simple apparatus is required, apparatus at the service of the medical practitioner, for whose benefit the method is really reintroduced. The urease method on the ordinary scale is not mentioned; it requires the same apparatus as that figured on p. 330. It was described in this country before Van Slyke's micro-method.

Altogether the book contains all the common biochemical methods needed by the medical student, as well as the more important of those used by the advanced student. Their description is most excellent, and no student should fail to obtain satisfactory results. We are inclined to think that the details of the methods for advanced work are rather too copious; it is hardly necessary to tell the experienced worker how to make a 50 per cent. solution by volume of sulphuric acid. The chapters on solution and preparation of certain amino acids, which were a feature of the fifth edition, are the best examples of the way Mr. Cole tests all the processes he describes, and thus carries out a great deal of valuable research which is of immense benefit to advanced workers and to his colleagues.

JOURNALS.

Parasitology. Edited by G. H. F. NUTTALL, F.R.S. Vol. XII. No. 3. September, 1920. C. F. Clay, Cambridge University Press. 15*s*. net; yearly subscription, £2 5s.—The number opens with a short note on Malformations in Ticks, by L. E. Robinson. The author describes five different cases of malformation which he believes to be the result of some mutilation of the tick during the course of the preceding nymphal phase. The article on a Malaria Survey in the Malay Archipelago, by N. H. Swellengrebel and J. M. H. Swellengrebel de Graaf, contains a complete account of the Anopheline Fauna in the Malay Archipelago. This fauna is composed of many species, of variable importance as vectors of malaria. For the checking of the more severe epidemic and endemic manifestations of malaria it would be important to control or exterminate the important vectors—e.g., *Myzomyia ludlowi*, *M. aconita*, and *Nyssorhynchus maculatus*. It is, however, very difficult to eradicate anopheline larvæ in the Malay Archipelago on account of the fact that they breed in all kinds of temporary collections of water which are very abundant in the rainy season. This makes the eradication of *M. aconita* and *N. maculatus* practically impossible, but the sanitary conditions in the places where they breed can be ameliorated by improving the existing methods of rice cultivation. On the other hand, a specific sanitation is practicable in malarious regions where *M. ludlowi* is the chief vector. In the case of the inland variety of this species, the larvæ of which frequent fish ponds, the abolition of the latter will exterminate this species. In the case of the littoral form of *M. ludlowi*, which is confined to salt or brackish water, in which algæ and other filamentous plants are growing, it is important to avoid all kinds of constructions: bunds, locks, &c., which obstruct the movement of tidal water. In places where the tide runs freely, as in the mangrove swamps, *M. ludlowi* appears to be absent.—In the article on a Survey of Cawston's Species of South African Cercariæ, Ernest Carroll Faust gives a short account of his examination of a very rich material collected by Dr. F. G. Cawston in Natal and the Transvaal, undertaken with the object of discovering the origin of the fluke infection of these regions. Thousands of specimens of *Limnea natalensis* and *Physopsis africana* were dissected by Dr. Cawston; the first-named was proved to be the host of six species, while the second harboured nine different species of cercaria. The paper contains a good description of *Cercaria pigmentosa*, Cawston (from *Limnea natalensis*) and *Cercaria 30- acanthostoma*, n.sp. (from *Physopsis africana*), and is concluded by a synoptic table of the valid species collected by Dr. Cawston, together with those recorded by Gilchrist.—The article Observations on the Geographical Distribution of Hookworms, by Samuel T. Darling, deals with the peculiar geographical and racial distribution of the two common species of hookworms infecting man: *Ankylostoma duodenale* and *Necator americanus*. *A. duodenale* is found in all Eurasiatic countries lying between 35° N. and 20° N. latitude. In warm mines the species may be found even farther north than 35°. This species was introduced into the American continent and the Antilles by coolies from India and Java. According to the author, in an equatorial climate nothing is inimical to the development of this species in the soil, and there seems to be no other reasons than the lack of opportunity for its introduction and acclimatisation in tropical regions. *Necator americanus* is extensively distributed in Eurasia, Africa, Indonesia and Polynesia south of 20° N. latitude. Near the tropic of Cancer it is associated with *A. duodenale*. In America this species has been introduced within historic times by kaffir slaves from Africa and by East Indian coolies from British India and Java. The relative number and species of hookworms may furnish some indication as to the ethnic origin of a people concerning whose history there is no record; it also gives valuable information as to the direction in which various migrations have taken place.—The article on the Anopheline Waters of Southern Flanders, by A. D. Peacock, is a report containing the results of his survey of waters in the area occupied by the British Second Army. The conclusions arrived at in this report are: (1) that the commonest anopheline mosquito in the area is *A. maculipennis*; (2) the degree of anopheline infestation appears to be low; (3) an epidemic of malaria is unlikely in this area; and (4) the control of the anophelines should not be difficult.—In the article on the Classification of the Ascaridæ, H. A. Baylis discusses the systematic value of different characters of the alimentary canal (presence and shape of the ventriculus, œsophageal bulb, œsophageal appendix, and intestinal cæcum). He describes six different types of structure of the alimentary canal which correspond respectively to six genera of the family.—Sarcoptic Scabies in Man and Animals, by C. Warburton, contains a critical survey of our present knowledge, and the number concludes with an article by F. J. Meggitt on a New Species of Cestode (*Oochoristica erinacei*) from the Hedgehog. This species, with several other cestodes, was collected by Dr. C. Boulenger from a hedgehog in Mesopotamia.

THE LANCET.

LONDON: SATURDAY, DECEMBER 18, 1920.

The Ministry of Health Bill.

THE Ministry of Health (Miscellaneous Provisions) Bill, after being dealt with piecemeal by the House of Commons, has been rejected as a whole by the House of Lords. Its composite character was against it from the first, for sectional dissent overrides general assent. Clauses 10 and 11, around which medical interest specially centred, embodied an attempt to deal with the questions of incipient mental disease and of hospital accommodation in accord with the really urgent needs of the moment, without too heavily committing the future. Regret at the immediate loss of these Clauses will be tempered by the hope that they may be reintroduced in less controversial company, and at a time when our legislators shall have a freer mind to consider all the bearings; for whatever the importance of modifying the Statute Book, the need for full and frank discussion of health matters in our deliberative assemblies is at least as great. In regard to hospital provision there may be actual gain from postponement, for we hope that the Committee appointed by Dr. ADDISON to inquire into the financial position of voluntary hospitals will complete their work and report within a brief space of time. Much of the information which the Committee needs is already available. Appropriate legislation can then follow hard upon the recommendations.

The Eradication of Yellow Fever: International Hygiene.

THE labours of the International Health Board, appointed and financed by the Rockefeller Foundation, began in 1914, and each succeeding year has shown a steadily widening range of operations. The Annual Report for 1919,[1] just published, gives an account of the various activities of the International Health Board, and among them were systematic and well-directed efforts to eradicate yellow fever from Guayaquil, the chief commercial city of Ecuador, and its principal port. Guayaquil has long been notorious as a distributing centre of yellow fever on the west coast of South America, and annually hundreds of lives have been lost there from that disease. The measures against yellow fever were begun in 1918 by a commission of experts appointed by the International Health Board, and as a result no cases of yellow fever were reported in the city during the last seven months of the year, nor did the disease reappear in 1920, the antistegomyia measures having been continued during that year. Unless the infection is reintroduced from one of the other endemic areas there are good grounds for assuming that Guayaquil will be added to the list of places, such as Havana, Rio de Janeiro, Para, Manaos, and the Panama Canal Zone, which have been freed from yellow fever by the application of the measures which were suggested in 1900 by the United States Army Yellow Fever Commission, and which largely depend on the destruction of the stegomyia mosquito and its breeding places. One of the members of the International Health Board's Commission in Guayaquil was Professor H. NOGUCHI, a Japanese bacteriologist, who claims to have discovered an organism which he has named the *Leptospira icteroides*, and which he is "reasonably certain" is the true parasite of yellow fever. From it he has prepared a vaccine and serums which he states are protective in animals. While their use in man has been limited, there is much evidence to show that they have real value.

Outbreaks of yellow fever occurred in 1919 in Central America in the Republics of Honduras, Salvador, Nicaragua, and in Mexico, as also in Brazil and Peru. In response to appeals by the smaller States of Central America for help in combating yellow fever, the International Health Board of the Rockefeller Foundation dispatched a trained field force to their assistance, with the result that in a few months the disease had almost disappeared, only a few sporadic cases being subsequently reported in Salvador. Arrangements also were made in 1919 to send to the West Coast of Africa a mixed Commission, of which the late and much lamented General GORGAS was to have been the chief, to study yellow fever in that region—or rather the disease there which is regarded by many persons as yellow fever. The fact that NOGUCHI'S spirochæte has been definitely shown to be associated with yellow fever should afford the West African Commission a better opportunity than has hitherto been available for studying the disease along the coastal districts of West Africa. The valuable assistance which the Rockefeller Foundation has given in the battle against yellow fever to the smaller States, which cannot help themselves, deserves hearty recognition from all; these systematic efforts will not only reduce in time the number of endemic areas, but they will also throw further light on the ætiology of the disease. There are, we think, some solid grounds for believing that before long yellow fever will be relegated to the list of diseases which are disappearing from the world.

It is well to be able to hold this cheerful view in face of the last Report on Public Health and Medical Subjects issued by the Ministry of Health, which recounts the evidence as to the diffusion of plague, cholera, and yellow fever throughout the world during the first four years of the war.[2] The Report is furnished by Dr. R. BRUCE LOW, who was responsible for many of the similar documents which were issued annually by the Local Government Board, but which had to be discontinued under war conditions. The Report does not deal with the pathology and bacteriology of the diseases, but resumes the historical and geographical features of their incidence and mortality during the years under review, and it forms a grave warning to all populations that plague, cholera, and yellow fever, being endemically present in certain areas, constitute foci whence either disease may be propagated, where as yet it has not appeared or has been unable to establish itself. To a seafaring nation like ourselves, whose ports are visited by the mercantile fleets of the world, the control of exotic disease is a matter of national importance, and the Ministry of Health has recognised the responsibility in the matter, formerly assumed by the Local Government Board, which body instituted a weekly notification to the principal sanitary authorities in

[1] The Rockefeller Foundation: International Health Board, Sixth Annual Report for 1919; New York, U.S.A., 61, Broadway. Pp. 210.

[2] Reports on Public Health and Medical Subjects, No. 3. The Progress and Diffusion of Plague, Cholera, and Yellow Fever throughout the World, 1914-17. Ministry of Health. London: Published by His Majesty's Stationery Office. 1920. Price 7s. 6d. net.

this country of the known prevalence of plague, cholera, and yellow fever in foreign ports. The value of these reports will now be greater by their extension in scope, and by the systematic working of the important agreements which have been executed between various countries for international protection. But international agreements, however faithfully executed, will never form more than a first line of defence between affected and unaffected countries, supplementing the natural defences of climate and temperature. Any of these diseases in the most highly organised community may, if watchfulness is relaxed and geography permits, spread from place to place, eluding the international cordon; but none will have any chance of spreading where the population is living under good public health conditions. To recur to the labours of the International Health Board as exemplified by its magnificent work against yellow fever, we may be certain that that work was supported throughout by rigorous attention to general hygiene, and did not stop with the destruction of the stegomyia. As Sir GEORGE NEWMAN well says, in an introduction to Dr. BRUCE LOW'S Report, the great epidemics call for particular methods of prevention, such as measures to deal with carrier and contact cases in cholera, with rats in plague, and with mosquitoes in malaria and yellow fever, but attention to the universal needs of a healthy life for all men must also be forthcoming.

Gas Warfare and Medical Men.

FIGHTING animals use tooth and claw with a complete abandonment to the one absorbing purpose of the moment. With human beings it is a curious thing that even in a life-and-death struggle certain rules of the game should survive so long. The soft-nosed bullet, known to be many times more effective in stopping an advancing foe, was never used to any extent in the war, and when the terrible weapon of poison gas was introduced by the enemy it produced a storm of horror which many of them now admit to have been one of the chief factors in losing them the war. Constrained by necessity, we were not slow in retaliating with phosgene, chloropicrin, phenylarsine, and it is common rumour that other and still deadlier respiratory poisons were in reserve when hostilities ceased. In the meantime the Chemical Warfare Medical Committee, including the foremost physiologists of the day, with Professor A. R. CUSHNY as chairman and Dr. J. S. EDKINS as secretary, studied the pathology of pulmonary irritant gases and the means of combating them, and their labours were embodied in a series of reports to the Medical Research Council, each of which was awaited with painful suspense by those who were called upon to treat the tortured victims. After the armistice, and the downfall for a generation of organised militarism in Central Europe, it was felt by humane people that chemical warfare at least was a thing of the past and no more than an evil dream. A rude awakening was contained in the announcement by the War Office in October last of the formation of a Committee whose function was to be "the development to the utmost extent of both the offensive and defensive aspects of chemical warfare." Professor FREDERICK SODDY, in a letter to *Nature* on Nov. 4th, declining to become an associate member of this Committee, stated that "the Army Medical Service is non-combatant, and is intended to ameliorate the horrors of war." Universities and scientific men stand, he wrote, for something in the world higher than anything which has as yet found expression and representation in Governments, particularly in their international relations.

It is now further announced in *Nature* for Dec. 9th that facilities are to be offered in the Pathological Department of the University of Birmingham to train the naval and R.A.M.C. personnel required for the physiological section of the experimental station of the Chemical Warfare Committee at Porton in Wiltshire. Professor J. SHAW DUNN, whose work on the morbid changes associated with the inhalation of poison gases is so well known, is in charge of this department. But it is surely a disquieting item in our peace programme that a university department, which has hitherto been engaged in training medical men to save life, should add to its activities instruction which is to assist in discovering new methods for destroying other people in a particularly horrible way. No doubt the particular function of the R.A.M.C. officers engaged will be to consider masks and other methods of protection and to devise treatment for the injured and sick. But the connexion of the defensive and offensive aspects of gas warfare is so close and intimate that considerable care will have to be taken if medical men are not to find themselves propagating offensive inquiries. We hope it will be found possible to avoid introducing a distraction of this kind into the routine work of a university. The medical profession has been in the past in the unique position of being able practically to dictate how its members shall be used in war, and it has chosen that its activities shall be strictly confined to alleviating the misery and sufferings of the combatants. It is a fine tradition and should be jealously guarded.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at the offices of the British Medical Association on Thursday, Dec. 2nd, Dr. G. E. Haslip in the chair. The chairman presented an interim report of the nine months ending Sept. 30th, in which he showed that, practically speaking, in all classes of insurance, the income of the Agency had increased. The expenses have also increased, but there is a reasonable expectation that the new business negotiated will more than compensate. The receipts from motor-car insurances, from accidents, and from miscellaneous insurances show a rise, and the sum assured in life business during 1920 now represents £84,000. If this side of the business continues to grow in the manner in which it has grown during the last two years, it is clear that the sums which can be devoted to the cause of medical benevolence will become quite large.

It was resolved by the Committee to make a distribution out of the surplus funds of the Agency to various medical benevolent funds, and the sum of £557 10*s.* was allotted as follows: Royal Medical Benevolent Fund, £175; Royal Medical Benevolent Fund Guild, £175; Epsom College Benevolent Fund, £157 10*s.*; Royal Medical Benevolent Fund Society of Ireland, £25; Birmingham Medical Benevolent Society, £25. As a result of this distribution the total given to medical charities for 1920 is £1015, and the sums allocated since the start have reached £6435. The grants made to Epsom College provide the Agency with votes for the Foundation scholarships. If medical men know of candidates whose cases command special consideration, they are asked to communicate with the Treasurer of the Medical Insurance Agency, 429, Strand, or with Editor of THE LANCET.

Annotations.

"Ne quid nimis."

A UNIVERSITY CHAIR OF PHYSIOLOGY AT MIDDLESEX HOSPITAL.

AN anonymous donor has given £20,000 for the endowment of the University Chair of Physiology at the Middlesex Hospital Medical School. The gift marks a growing appreciation of the importance of study and research in physiology as the very foundation of medical science and practice. The chair of physiology at the Middlesex Hospital is held by Professor Swale Vincent, well known for his writings on the ductless glands and internal secretions. In his department he has associated with him one of the physicians of the hospital. This arrangement ensures that physiological principles will be taught in the clinical wards, and that any new discovery will soon find its place in the medical practice of the hospital.

The gift, moreover, has a special significance. It indicates that another step forward has been taken in Lord Athlone's scheme for maintaining and extending the university standard of teaching and research in the Middlesex Hospital Medical School and for cementing its close relationship with the University of London. The struggle for survival among the metropolitan medical schools has stimulated in many of them attempts to improve teaching and buildings, and to acquire a reputation for research and for games, in fact, all the many factors contributing to the vitality of a medical school. The Middlesex Hospital Medical School has moved forward steadily in all these directions. It has not followed the fashion of a radical revision of clinical teaching, but has started at the other end and concentrated first on seeing that the foundations of a medical education in the early subjects are well and truly laid. Lord Athlone, chairman of the hospital, is anxious to secure the coördination of medical education, research, and treatment by drawing together a body of scientific workers who will collaborate closely with the physicians and surgeons in sustained attack against disease. In this he has wisely sought and obtained the coöperation of the University of London. There are now six professorial chairs in connexion with the hospital, and the chair of physiology is the second to receive permanent endowment, the chair of physics having already been endowed early in the present year. There is still need of a great effort to secure the establishment of the remainder on a firm financial basis, and Lord Athlone looks forward with confidence to obtaining the help of other wealthy men who appreciate the importance to the community of sound medical education.

HAITI DROPSY.

A NEW and puzzling œdema syndrome is reported from the island of Haiti. Clinically it resembles beriberi, but without the characteristic paralysis of the extremities and with a slower pulse-rate. It develops more rapidly than "war" œdema, has a higher mortality, and is little influenced by changes of diet. Unlike epidemic dropsy, there is no fever. Drs. W. L. Mann, J. B. Helm, and C. J. Brown, of the U.S. Navy, who report this syndrome,[1] have observed no less than 3000 cases. Most of the cases occurred in prisons, the disease being comparatively rare outside these institutions, though it is said to have existed in the island for at least 40 years. No positive evidence of its causation is forthcoming, though on the negative side it has been shown that contagion, deficient nutrition, or ventilation are none of them essential factors. Œdema usually commences on the dorsum of the feet; later all the serous cavities may be involved. It develops in the course of chronic or acute diseases, not infrequently during or after an attack of diarrhœa, which is present at some stage in half of the cases, but often œdema itself is the first symptom. Sometimes there is slight anæsthesia, more often tenderness of the limbs. Wasting is frequent and may be extreme. There is bradycardia; the average pulse-rate in 88 cases was 57. The termination in fatal cases is said to be nearly always the same:—

> Following a period of weakness, severe diarrhœa, or mild terminal broncho-pneumonia, the patient gradually loses consciousness, the limbs become cold, and breathing deep, slow, and stertorous; the pulse weaker, and finally imperceptible at the wrist; there may be incontinence of urine and fæces, and in from two to six hours the patient dies.

Two hundred cases came to the post-mortem room. In many a general œdema was found. In some, in whom emaciation was the most prominent symptom with little or no œdema, the tissues were found to be dry, the spleen of normal size or with wrinkled capsule, and very tough, and the lungs usually congested. Further investigations are being pursued, and their result will be awaited with great interest.

[1] Journal A.M.A., Nov. 20th, p. 1416 (vol. lxxv.).

SELECTIVE SICKNESS INSURANCE.

OUR Vienna correspondent recently described[1] a system of insurance for the middle classes against sickness and even against specific diseases or operations. The Yellow Cross was founded five years ago, and appears to have been organised on sound business lines. It was started in order to reconcile the needs of the impoverished middle-class patient with those of his medical attendant, and according to our correspondent it appears to have succeeded so well that medical men have given it eager support, not only as doctors, but as members. The dual benefit is easy to appreciate. The financial plight of the middle classes in Vienna had driven them to attend general hospitals when sick instead of sending for a private doctor, whose receipts had thus sunk often below subsistence level. Under the Yellow Cross insurance system the doctors are now able to keep their private patients at normal fees. As to the patients, the unaccustomed atmosphere of a public hospital and the absence of bedside amenities were found to constitute a real hardship, amounting even to a handicap against speedy recovery, to say nothing of the prejudice and repugnance which caused them to cease attending at the earliest possible moment. The principle is that the potential patient pays a small yearly premium, in return for which he can claim that his doctor, drug, and institutional expenses shall be paid up to the sum—3000 kronen or a multiple thereof—for which he is insured. The sole proviso appears to be that the actual bills must be sent to the Yellow Cross for settlement; should they exceed the amount insured for the patient has to pay the difference. Arrangements with certain hospitals and sanatoriums have been made which enable the insured patients to be received at greatly reduced fees, and therefore the amount claimable would cover a longer period of residence in these institutions than in others which, however, the patient is quite free to select. Any specific operation or medical condition can apparently be insured against. Our correspondent states that a sum is specified for every conceivable variety likely to occur. We may picture the valetudinarian enjoying a harassed afternoon selecting his diseases and making annual detailed changes in his insurance policy. There may be a general policy covering certain alternatives, or possibly excluding certain obscure or expensive ailments that he might be forced to deny himself the privilege of contemplating. It is not clear whether such a policy exists, or how other details are worked out. Would the premium against appendicitis be weighted for one who has had attacks of abdominal pain, or against malaria for one who has travelled in the East? To what extent, if at all, would the premium per unit of 3000 kronen vary with the present condition, past or family history of the patient? The risks of childbirth, again, could hardly be assessed at the same

[1] THE LANCET, Nov. 27th, p. 1111.

figure for the old or young, multipara or virgin. We await more information on these points.

Meanwhile, it is not generally known that we have in England an organisation of a similar kind, on a much smaller scale, to which we commend the attention of practitioners. The Professional and Business Women's League (secretary, Miss Mildred Ransom, 195, Edgware-road, London, W. 2) was founded in 1913, and though the membership is restricted to one sex, and to a limited section thereof, it has much in common with the Vienna scheme. An important difference of principle, however, is that, while the Yellow Cross is essentially a business, run on actuarial lines, paying its own way, the Professional and Business Women's League is not entirely self-supporting, but receives help from honorary members not eligible for its benefits. The ordinary membership is confined to women working for a living and unable to afford the expense of a serious illness. For a subscription of 5*s*. 6*d*. a year such a member is entitled to four weeks' free treatment in a private ward of a hospital; any national insurance money due to her remains her own property. When ill, she has merely to send a medical certificate and the secretary does the rest, the patient having a choice of hospitals when possible, her only obligation being the payment for any period longer than four weeks in hospital and for her removal therefrom. Moreover, at the discretion of the Committee, special grants are made to those who cannot for some good reason be moved to one of the hospitals with which the league contracts for beds. Practitioners are often puzzled how best to deal with professional and business women patients who fall ill while living in a hostel or alone in a flat, and this league and the development of other self-supporting schemes on similar lines may prove the solution of such problems.

SENECIO DISEASE.

WITH reference to the article on this subject in THE LANCET of Oct. 23rd Professor Wyndham Dunstan, Director of the Imperial Institute, South Kensington, informs us that a full investigation of *Senecio latifolius* from South Africa was conducted some years ago at the Institute, when the "Molteno" disease of cattle and horses was shown to be the result of poisoning by this plant. Professor Dunstan writes as follows:—

In the interesting article on Senecio Disease, by Dr. F. C. Willmot and Mr. G. W. Robertson, of South Africa, which appeared in your issue for Oct. 23rd, reference is made to similar diseases in stock, occurring in several countries and caused by species of Senecio. In South Africa it was suspected that *S. latifolius* and *S. Burchellii* were the cause of a disease affecting cattle and horses, known there as Molteno disease, and in 1907 a supply of the former plant was forwarded to the Imperial Institute in order that this point might be investigated. A summary of the results obtained was published in the *Bulletin of the Imperial Institute* (1911, ix., 346).

A detailed chemical investigation of *S. latifolius* was made in the laboratories of the Imperial Institute by Dr. H. E. Watt, and the results were published in the *Transactions of the Chemical Society* (1909, xcv., 466). Specimens of the whole plant collected before flowering contained 1·20 per cent. of alkaloids, whilst specimens collected after flowering contained only 0·49 per cent. The total alkaloids were separated into their components, which proved to be two new alkaloids, and were named senecifoline and senecifolidine respectively. Both alkaloids crystallise well and yield crystalline salts. Pharmacological trials with senecifoline nitrate and senecifolidine nitrate were undertaken for the Imperial Institute by Dr. A. R. Cushny, F.R.S., of University College, London, who published a summary of his results in the *Proceedings of the Royal Society* (1911, B, lxxxiv., 188) and in the *Journal of Pharmacology and Experimental Therapeutics* (1911, ii., 531). Dr. Cushny, as a result of his experiments, concluded that the symptoms and post-mortem findings in animals poisoned by the two alkaloids resemble so closely those induced in cattle and horses by *S. latifolius* in South Africa, that there can be no question that the Molteno disease is the result of poisoning by senecio alkaloids.

Senecio illicifolius and *S. Burchellii*, which, owing to their presence in wheat crops, are believed to have caused the outbreak of senecio disease recorded by Willmot and Robertson, do not appear to have been examined chemically, but it seems highly probable that they contain alkaloids similar to, if not identical with, those of *S. latifolius*.

As stated by Willmot and Robertson, preventive measures against the disease, both in human beings and in stock, are essential. These will include the extermination of the suspected plants and the more thorough cleaning of the wheat. In Nova Scotia, where a similar disease, caused by *Senecio Jacobæa*, the common ragwort, has sometimes caused serious harm to stock, much attention has been given to the former point, and in 1911 an account of measures which have proved successful in Canada in eradicating ragwort was furnished to the South African authorities.

Professor Dunstan states that these measures consist, briefly, of adopting a shorter rotation of crops, more thorough cultivation, the use of weed-destroying implements, cutting the plant before the seed is formed, and, as sheep do not seem to be liable to the disease, grazing these animals on land infested with the plant.

WELFARE WORK ON A GRAND SCALE.

WHEN, in 1917, the United States Shipping Board, which regulated all shipping, recruited and trained officers and seamen, and developed ports and shipyards, found it had to build immense numbers of ships to nullify the submarine activities of Germany, it formed an "Emergency Fleet Corporation" as its executive agent. This corporation took over all suitable yards, planned and constructed new ones, and built ships on such a scale that, had the war continued into 1919, there would have been half a million tons of shipping delivered monthly. It employed or supervised the employment of some 300,000 men, and that often in new towns, in districts at the time unsettled and unorganised. From the first it became evident that there must be a special department to take care of the health of the shipworkers, and on the advice of General Gorgas, Major (now Lieutenant-Colonel) P. S. Doane, a Chicago physician, was made director of the Department of Health and Sanitation just a year before the armistice. Lieutenant-Colonel Doane gives an astonishing account of the Department's activities in a recent number of the *Military Surgeon*. A staff was formed of doctors, sanitary engineers, and sanitarians, all men of high standing, whose efficient service was offered as a patriotic duty. They produced a Book of Standards, regarding the medical care of workers, treatment of wounds, suppression of infectious diseases, construction and outfitting of first-aid stations, hospitals and dispensaries, extermination of mosquitoes and flies, purity of food and water, and healthy housing. This book was issued to every dockyard; and in every dockyard the attempt was made to live up to it. Its principles were found to pay by their effect on output. Every workman was medically examined and men were told off to suitable work. They were all vaccinated; antityphoid inoculation was offered and frequently accepted, and all cases of sickness, even minor ailments, were carefully attended. Lectures were given on "Safety first," which rendered the men careful to avoid accidents to themselves or others. Re-examinations were often made; typhoid carriers were excluded at Baltimore, malarial cases at Hog Island, near Philadelphia, and venereal cases everywhere. An army film, "Fit to Fight," was shown to warn people of the risks of sexual immorality. Regulations for avoiding heat prostration were published and saved many lives. Resident physicians and nurses and hospital facilities were provided for in the big yards. Water-supplies were all examined and new supplies brought in when needed. Fly-proof latrines, or water-closets with satisfactory drainage, were established everywhere. Wherever possible shower-baths, also lavatories for painters, were provided. Food-supply, the cleanliness of restaurants, and patent dish-washers with boiling water had attention. Elaborate housing schemes had to be devised, offering the workers adequate air and light, sanitary equipment, recreation, and laundry opportunities and janitor service. At the building of Hog Island, in a swamp, the State of Pennsylvania was encouraged to provide 120 miles of ditches. There were few mosquitoes during the next summer; South Philadelphia had none at all. But Hog Island had flies, traceable to mean piggeries, which were removed. A refuse heap with millions of

rats at Newark was burned. No epidemic except influenza occurred during the period seriously to hamper any one yard. It is claimed that through the wise measures taken not a single Emergency Fleet Corporation influenza case was lost in Philadelphia; also, in the severe winter of 1917–18 there were fewer cases of pneumonia in the yards than in the army. This is all good, but Lieutenant-Colonel Doane thinks the harvest is not over. A realisation of the economic advantage of sanitation and personal hygiene has been spread far and wide. The work of this department will live when the need of shipbuilding has been forgotten.

DIAGNOSIS OF ENCEPHALITIS LETHARGICA.

IN his useful article on the occurrence of optic neuritis in encephalitis lethargica, which appears in our present issue, Dr. C. P. Symonds depends for his diagnosis chiefly on the exclusion of other possible diagnoses, inasmuch as we are at present unable to identify the causal virus of the disease or to establish its existence by serological tests. Certainly the method of exclusion is a pleasurable exercise for nimble minds, but other means are in sight now that experimental proof is complete that encephalitis lethargica is caused by a living virus. Professor J. McIntosh describes in the *British Journal of Experimental Pathology* for October the successful inoculation of one monkey with material from another, which had been inoculated from a human case and had developed the disease. This, with the results obtained by C. Levaditi and P. Harvier, represents a definite step forward in our knowledge. The stages of advance are similar to those by which the pathology of poliomyelitis was elucidated. The first step is the successful inoculation of an animal with virus from a human case; the second is the proof that the virus is a living one, capable of multiplication in the inoculated animal and of transmission from animal to animal; the third is the discovery of the pathogenic organism. In encephalitis lethargica the first two stages have been accomplished by Dr. McIntosh, but the third remains; in poliomyelilis all three have been completed. By a fortunate chance Dr. McIntosh has been able also to record the spontaneous infection of a previously healthy monkey by its inoculated companion.

A NURSING SCHEME FOR MANCHESTER.

MANCHESTER has taken an important step in extending its nursing institution, so that facilities may be offered to public health authorities and to approved societies under the Insurance Act to obtain fully trained nurses when required. The scheme should be of benefit both to a large section of the public and to trained nurses, whose leaders have for so long urged the importance of the development of public health nursing under municipal guidance. If wise use is made of the extended opportunities afforded her, the public health nurse should become a powerful factor in the education of the community. The pressure on our hospitals and district nursing associations, handicapped as they are by financial embarrassment, must inevitably exclude a large number of sick people from nursing care, and such a scheme as Manchester proposes should prove a connecting link in the machinery being established for improved care of the sick and health of the people. The failure of many excellent enterprises in the past was due to an unstable financial basis, and one of the most commendable features of the Manchester scheme is its sound economic footing. A contribution of 3*d.* for each insured member is proposed, and £1000 is being given by the Manchester Insurance Committee and £500 by the Public Health Committee. An increase of municipal nurses should prove a valuable asset in times of epidemic. The importance of providing well-trained women for this work cannot be over-estimated and the success of the scheme must depend largely upon high standards of qualification being adopted and just salaries being paid; also on a rigid limit to the number of patients allocated to each nurse. The scheme should prove an incentive to those responsible for nursing education to evolve a course of training which shall produce women specially suited for municipal nursing, since the field of service is eminently broader than that of a hospital or private institution. The municipal nurse must know something more than the hospital nurse knows at present of the industrial, social, and economic conditions of the people, and must continually bear in mind that her work is not only to tend the sick but to teach the people how to combat sickness. Until special endowments are made for the education of nurses or a system of payment is established the nursing service cannot be expected to realise its enormous possibilities, and it is for universities and educational authorities to supplement the limited instruction received by nurses in hospital for work in the field of public health.

THE PRESENCE OF FORMALIN IN URINE.

THERE are a large number of formaldehyde derivatives now on the market which depend for their therapeutic effect on the elimination of this substance in the urine and other secretions. Dr. E. Pittarelli[1] describes a method of detecting the presence of formaldehyde in the urine, which is at the same time very sensitive and simple, and may prove of great use in the clinical laboratory. The principle on which the test is based is the following. Alkaline solutions of the paramidophenols, and more especially of methyl paramidophenol (the "metol" of photographic commerce), produce a crimson colour with formic phenylhydrazone, and this becomes purple on the addition of magnesium hydrate. So that if phenylhydrazine be added to a solution of formaldehyde, resulting in the formation of phenylhydrazone, and then successive quantities of metol and caustic soda, an intense crimson colour is obtained, which on the addition of a magnesic salt assumes a strikingly beautiful purple. This crimson colour is easily appreciable in a solution of 1 in 100,000 formaldehyde and the purple tint adds enormously to the sensibility of the test, since the colouring matter is precipitated and concentrated into a small bulk. With formaldehyde and helmitol the reaction takes place instantaneously and in the cold, other derivatives necessitate the addition of heat. The practical application of the test requires 1 per cent. solutions of phenylhydrazine and metol, 25 per cent. caustic soda, and saturated solution of sulphate of magnesia, the technique being as follows: To 25–30 c.cm. of urine, acid or made acid, 10–12 drops of phenylhydrazine solution are added and the mixture heated to boiling point; after a few minutes 5–6 drops of metol and 3–4 of soda solutions are added when a crimson colour is immediately produced, which, when marked, renders any further manipulation unnecessary.

PNEUMOCOCCIC ENDOCARDITIS.

THOUGH endocarditis has long been recognised as a complication of pneumonia the number of recorded cases is limited. Netter in 1886 was able to collect only 82 cases, and Preble in 1904 was able to increase the number to only 141. Little of importance has been added to the subject since Netter wrote upon it. He produced endocarditis in animals by intravenous injections of pneumococci, especially after the endocardium had been injured. He emphasised the point that the pneumococcus involves the right heart one-sixth times as often as the left, whereas other organisms involve it one-nineteenth times as often. He also confirmed the observation of Heschl that endocarditis following pneumonia is frequently associated with meningitis. Preble added little to Netter's conclusion, but he found that endocarditis complicated 1 per cent. of all cases of pneumonia and about 5 per cent. of fatal cases. In 1902 Wells reviewed the subject, and pointed out that endocarditis may occur early (seventh day in one case, ninth in another), and that after recovery the valve was likely to be impaired by cicatricial contraction. Infarcts occurred in about half of the cases. Physical signs of endocarditis were often lacking. In 8·5 per

[1] La Riforma Medica, Oct. 9th, 1920.

cent. of the cases the tricuspid valve alone was affected, in 56 the aortic, and in 40 the mitral. In the *Johns Hopkins Hospital Bulletin* for November Dr. H. M. Thomas and Dr. D. O'Hara have reported the following case:—

A man, aged 45 years, was admitted on May 19th, 1920, the fourth day of an attack of pneumonia. The whole of the lower lobe of the right lung and a small patch of the lower lobe of the left were consolidated. The leucocyte count was 16,500. The sputum contained the pneumococcus of Type 1. Antipneumococcic serum was given intravenously. On the 23rd the temperature had fallen to 100° F. and on the 24th to normal. But it rose again on the evening of the 25th and on the 26th was 101°, with a diffuse urticarial rash. This was thought to be serum sickness. On the 30th the lung signs were nearly the same as on admission. On June 5th the pneumococcus was still present in the blood. For the pneumococcus septicæmia, which was continuing after the crisis, it was decided to resume the intravenous treatment, but in order to avoid anaphylaxis from horse serum Mulford's antipneumococcus antibody extract was given. The temperature fell and the patient seemed improved, but on the 7th he had a chill and his temperature rose to 104°. Then it was decided to desensitise the patient for horse serum and resume the serum treatment. On the 9th a blood culture showed 3000 colonies of pneumococci per cubic centimetre of blood. At the right angle of the scapula the breath sounds were somewhat amphoric, with medium to large consonating râles. X ray examination suggested pulmonary abscess. As the original attack of pneumonia had apparently been recovered from the lung condition did not seem adequate to account for the septicæmia. In spite of the absence of murmurs at any time it was thought that acute endocarditis might be responsible for the symptoms. On June 13th the signs of consolidation were more marked at both bases, and the general condition much worse. Death occurred on the 14th. The necropsy showed lobar pneumonia of the left and right lower lobes, and an abscess measuring 4 by 3 by 2 cm. in the right lower lobe, a hæmorrhagic infarct of the left upper lobe, right and left healed pleurisy, acute vegetative endocarditis of the tricuspid valve, focal meningitis, chronic aortitis and arterio-sclerosis, and acute splenic tumour. There was no gross evidence of resolution in the consolidated areas. The vegetation was composed of masses of fibrin and cellular débris enclosing collections of Gram-positive diplococci. The meningitis was localised near Broca's area, and consisted of greenish purulent material lying beneath the arachnoid. Smears from the pus showed Gram-positive diplococci. The recorded cases suggest that Type 1 pneumococcus is responsible for the majority of the cases of pneumococcic endocarditis.

Dr. Thomas and Dr. O'Hara think that the present case indicates the advisability of frequent early blood cultures during convalescence from pneumonia whenever a rise in temperature occurs, and that serum treatment, though not promising, is the only means of combating the septicæmia.

THE CALCUTTA SCHOOL OF TROPICAL MEDICINE.

THE Calcutta School of Tropical Medicine and Hygiene consists of the following four combined sections or institutions: (*a*) the Carmichael Hospital for Tropical Diseases, with accommodation for 116 patients (43 European and 73 Indian), which represents the first introduction into India of the modern system of hospitals constructed for research work and associated with large research laboratories; (*b*) the School of Tropical Medicine, with laboratories designed and constructed throughout for the special purposes for which they are intended; (*c*) the Institute of Hygiene, which includes the Public Health Laboratories for Bengal; and (*d*) various research endowments, having amongst their objects of research kala-azar, ankylostomiasis, leprosy, diabetes, and the epidemic respiratory diseases associated with the mining industry. The purposes of the scheme of which the Calcutta School is a result are "to furnish post-graduate teaching and training in tropical medicine and hygiene, and to provide full facilities for continued and coördinated research work in tropical diseases." An appeal for financial support, together with a memorandum of the present position of the school, has now been issued; for immediate purposes a sum of Rs. 100,000 is urgently needed properly to equip the Carmichael Hospital, and also the provision of at least a further Rs. 50,000 a year for five years to finance the existing research appointments. The original proposal of foundation was put forward in 1910 by Sir Leonard Rogers, to whose initiative and ten years' untiring effort the school owes its existence. His plan was approved by the Government of India on the advice of the late Sir Pardey Lukis, then Director-General, Indian Medical Service, but unexpected difficulties were early encountered, and when, in 1914, the scheme was almost ready for the commencement of work, the outbreak of war rendered it impossible to assemble an adequate staff. Sir Leonard Rogers was, however, enabled, with the aid of influential commercial and private support, to build the Carmichael Hospital. Research work has begun, the funds for which are administered by a governing body composed of medical men and representatives of the subscribing tea, jute, and mining associations. The Government of India is still unable to spare the necessary staff of seven professors, but it is hoped that these officers will be available by March, 1921, when the school will be fully opened. It is a curious fact that for 15 years after the founding of two schools of tropical medicine in England no similar institution existed in any tropical portion of the British Empire. The city of Calcutta and the provinces of Bengal, Bihar, and Orissa contain a vast quantity of clinical material for the study of tropical diseases; the possibilities in front of the Calcutta school are limited only by financial considerations. The endowment of medical research is an investment which repays the original expenditure many times over in improved conditions of public health, and all whose concern is the advancement of science and the welfare of India and the world must hope that the necessary support will speedily be forthcoming.

BENIGN DECIDUAL TUMOURS OF THE UTERUS.

Dr. John Benjamin Nicholls,[1] of Washington, D.C., draws attention to the occasional though rare occurrence of benign uterine tumours, exhibiting predominantly decidual characters, and containing little or no traces of chorionic tissue. Two classes of these growths may be distinguished—namely, ante-partum deciduomata, which appear during pregnancy and prior to parturition, and constitute the truest type of the tumour, and post-partum deciduomata, which develop after delivery or after the death of the embryo from bits of retained decidua. Of the nine cases of benign deciduomata collected from literature, including two from Dr. Nicholls's own practice, four were definite examples of ante-partum tumours, and consisted of one case of intra-uterine decidual adenoma appearing at a full-term labour and three cases of decidual polyps protruding from the external os in the third to fifth months of pregnancy. Of the last 3 cases, 2 aborted and 1 went to full term. The subsequent history of the patients for two to four years gave evidence of the benign character of the growth. Whether these tumours arose de novo from the decidua, or were previously existing polyps which underwent decidual transformation as the result of pregnancy, cannot be decided, but Dr. Nicholls is in favour of the former view.

AT a meeting of the General Council of King Edward's Hospital Fund for London held on Dec. 14th the total sum available for distribution was estimated at £193,000.

THE House and Library of the Royal Society of Medicine will be closed from Friday, Dec. 24th, until Tuesday, Dec. 28th, both days inclusive.

Dr. F. R. Fraser has been appointed Director of the Medical Professorial Clinic at St. Bartholomew's Hospital Medical School for a period of four years. This appointment carries with it a professorship of medicine in the University of London.

[1] American Journal of the Medical Sciences, November, 1920.

HYGIENE ON THE SEA:

ACCOMMODATION FOR SEAMEN IN SHIPS OF TO-DAY.[1]

(BY OUR SPECIAL CORRESPONDENT.)

V. CARGO STEAMERS.

THE ships of which I have hitherto given an account were newly built or refitted, and visited by permission of their owners. Lately, whilst going about docks, I went on board various vessels, of which it would be unfair to quote the names. They were all cargo steamers, carrying small crews and no passengers.

Conditions on a Freight Liner.

One large freight liner had her crew on board. They lived forward. The forecastle was divided into two by a midship bulkhead or partition, the sailors being on the right or starboard side, the firemen on the left or port side. There were some dozen sailors and a score of firemen; the cubic space was equal, so that the firemen were more crowded than the sailors. Though they had to reach their quarters over the bare iron deck and down a steep iron ladder, the men were much better off than in the old days, for they had on each side a crew space or sleeping-deck, a mess room, and a washplace; above all they had steam heat. As they were in the fore part of the ship ventilation was scanty, the light was poor, consequently cleanliness was hard to attain, and the atmosphere was stuffy. Especially was this true of the more crowded firemen's section.

Crew Space.

A seafaring man joins a ship with his effects in a bag, usually a little larger and heavier than the soldier's kit-bag. When the sailor comes on board his bag lies on the floor or "deck," under the berth appropriated to its owner. That berth is usually, as in this ship, a wooden bunk, one of those which run in two tiers round the sides of the crew space. In his bunk is his bed, supplied usually by the ship, and here he spends the most of his time off duty unless he is at meals. A shelf at the level of the lower line of bunks runs round the crew space and serves as a seat. The crew space is roughly triangular in horizontal section, and the smaller triangular space between the bunks is the men's dressing-room. The more people there are here, the more crowded is the space and the greater is the man's disinclination to change his clothes. The more people there are the stuffier is the crew space, and the less inclined are its occupants for the personal exertion required to secure cleanliness of person or of environment. It must be remembered that in ships with small crews each man finishes his watch very tired. It is generally allowed at sea that the sailor is a better class of labourer than the fireman, though, of course, there are personal exceptions. But the fireman gets £1 a month more than the sailor in recognition of the very trying nature of his job. It was interesting to note that in this ship the ventilating shaft (4 inches in diameter) from the deck was firmly sealed by the firemen but left open by the sailors, and that it was the worse-paid but less crowded sailors who had a white tablecloth for their mess table, and even a "sideboard cloth" for the mess shelf in the passage opposite their mess room door; an advance one was glad to see. All water for washing had to be carried here from the galley.

Forecastle Ventilation.

There was, of course, no skylight over these quarters, right forward as they were and in a small ship; a skylight would be hardly safe, it might be driven in by the sea, and anyway it would be sure to leak, still the want of it helped to make ventilation always inadequate. Ashore the great physical condition limiting ventilation is cold; people do not yearn for fresh air if it is cold fresh air. That difficulty is also present at sea. Ashore the risk of water entering is a minor consideration, but at sea a leaky skylight probably means that the two beds beneath it are soaked with rain. If heavy seas are violently thrown on board water washes about the deck, soaks the men's bags, wets their feet, makes the atmosphere so moist as to add a severe trial to the hardship of bad weather, and gives the men a great deal of trouble to get rid of it. Hence skylights and sufficient ventilation for crew spaces in the fore-end of ships are, by common consent, anathema. The remedy is to put the crew aft, as might have been done in this ship had the owners given the matter thought. The latrines I did not see as they were locked, the ship being in dock. They were on the fore deck and evidently, in bad weather, inconvenient of access.

Conditions on a Standard Ship.

The second ship was a standard ship. It will be remembered that when standard ships were being designed during the war the Sailors' and Firemen's Union insisted upon improved accommodation for crews. Their contention was thoroughly sound, and a great advance in hygiene in the Merchant Service is to be ascribed to the persistence of this Union; this advance might easily have gone to the credit of owners had they considered the matter. In this ship the crew spaces were aft, in the poop, again divided centrally, sailors on the one side, firemen on the other. The sailors' crew space had ten berths in double tiers round the space, iron cots on iron stanchions, the outer berths set in from the ship's side, itself covered with cork cement. The side ports or scuttles were larger than they would have been in the forecastle; at aft, as here, they are higher up and have never to resist so heavy a pressure of sea, are less likely to be cracked or broken, and are so a lesser risk to the safety of the ship. Consequently this space aft is better lighted. The light is less obstructed, the shadows less dense, as the iron cots are stronger but lighter than wood. They are, moreover, less likely to harbour insects. Further, there was a large skylight, and ventilating shafts here were of considerable diameter. Also the height of the crew space was greater. There were the usual lockers for the men's food, one for each man. I should guess a standard size locker to be 2 feet high, 9 inches broad, and a foot deep. There are never any shelves in these; there is only the bottom to stand the food on. A shelf would, of course, make them less easy to clean. Outside this crew space was a cabin for the the boys, and the lobby into which these two opened was used as a mess room, having a table and forms. Off the lobby opened another large cabin and mess room combined for the petty officers. The firemen's accommodation was similar. I understand that the Board of Trade and the Union allow an extra seaman to be carried on the articles as a seaman's cook, whose duty it is to keep the seamen's crew space clean, thereby greatly increasing comfort. Otherwise this duty falls to the boys. A similar extra hand to take care of the firemen's quarters has not, I understand, been yet called for; he is needed even more. The washing-places had cement floors and douches, fresh water in harbour, salt water at sea, and hot water brought in buckets from the galley. The water-closet was sheltered from weather, but its accommodation was unsatisfactory, consisting of an iron trough with a wooden seat over, fouled by the carelessness of one of the crew and not yet cleaned. Iron troughs are inexpedient and should be forbidden. Earthenware is so much more easily cleaned; its smooth surface gives less chance of fouling, and that means less smell. One saw here evidence of great advance in the Merchant Service. Gangs of women have for long cleaned passenger ships between voyages, and the same system is now being applied to cargo steamers; so the men join clean ships. All the crew spaces and mess rooms were steam-heated. The higher petty officers were berthed in the superstructure. They had a bath, with a steam-pipe to heat the water. It was alleged this had been fitted to provide warm water for washing paint, but the petty officers at any rate got the advantage. There was no hospital. This ship marks a distinct advance. She is

[1] Previous articles which have appeared in THE LANCET describe the accommodation on *Aquitania* (Sept. 11th), *Olympic* (Sept. 25th), *Imperator* (Oct. 9th), and *Achilles* (Nov. 27th).

the standard pattern, and even if her accommodation is not required by law, no ship should be built with the old drawbacks; if she were, would she get a crew?

An Old Pattern Forecastle.

A sailor with whom I made friends on board this second ship (with whose accommodation he was very pleased) sent me to the third, telling me her owners had the worst accommodation for their crews afloat. She was also a large ship of perhaps 5000 tons. She had a forecastle of the old pattern. The seaman gained access to it by a very small door in an iron booby-hatch or hood, and then down a steep iron ladder to a lobby in which is the water-closet. At the other side of an iron partition was the crew space, right forward, and triangular in shape, with wooded bunks in double tiers, the bunks on the outer side not exactly above one another, but each close against the side of the ship, which at that point was convex towards the crew space, the plates having been flared outwards to give the ship greater lifting power when pitching, and so making the men more comfortable and the ship safer. On the other hand, the portholes were very small, and being in the flare did not look to the horizon, but downwards; thus the light entering through them was diminished. The line from the ports over the leeboards of the upper bunks (the "leeboard," is the board which keeps a man from falling out of bed when the ship rolls) being continued, struck the opposite wall of the forecastle, not the deck or floor, which was, therefore, with the lower births, always in shadow. The men messed at a table in the forecastle, and there were the usual food lockers. The space was unoccupied and clean, but anyone could see it would not long remain clean, for not only was it dark, but encumbered with many pipes, large and small, running through it; hawse pipes for the anchoring cable to run through, steam pipes for the capstan overhead, &c. What lady would like, when cleaning her dining-room, to have to sweep or wash in between a number of close-set small pillars? The w.c. in the lobby was the usual iron trough pattern, separated, indeed, as by law from the crew space by an impervious bulkhead, but yet subjecting the crew space to its effluvia. On the other hand, it was protected from the weather, which was an advantage. Had crew space and w.c. been moved to the after end of the ship the men would have been better off. Officers were accommodated in the superstructure, amidships. The petty officers and apprentices lived below the upper deck in ill-fitted cabins made out of the hold. They messed in their cabins. It will be observed there are no mess rooms in this ship, except probably for the officers. People eat in their sleeping places, and there is no hospital, so if a case of infectious enteritis or of typhoid fever does develop on board the disease has every chance to spread. The iron trough-closet for the petty officers had no seats but only a wooden batten over the inboard edge; the whole accommodation for petty officers was very bad. The whole of the crew fittings of this ship are within the law, so, though out of date, they cannot be condemned. Years ago these regulations were thought sufficient. Since that time we have learned that they contribute to the spread of disease, and we want them altered; but the health of seamen is still under the Board of Trade, not under the Ministry of Health. Is it not time this should be changed?

ROYAL VICTORIA HOSPITAL, BELFAST.—At a special meeting of the board of management held on Dec. 6th, on the motion of the chairman of the board, Professor J. A. Lindsay, seconded by Alderman Mercier, J.P., and supported by the Vice-Chancellor of the Queen's University, Colonel John Vincent Forrest, C.B., C.M.G., was unanimously appointed superintendent of the hospital in the room of Colonel A. Deane, resigned. There were 35 candidates. In putting the motion the chairman paid a tribute to the late superintendent, who had filled that office for a period of 19 years with fidelity, efficiency, and satisfaction to the managers and the public. Colonel Forrest during the war acted for three years as secretary and assistant to the D.D.M.S. of the Boulogne area, and was later for two years D.D.M.S. of the lines of communications in Italy. He is at present A.D.M.S. of the Dublin district.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

French Ministry of Health.

IN a series of lectures recently delivered at the Musée d'Hygiène de Paris, Mons. Armand Guillon, Director of the Office Public d'Hygiène Sociale du Département de la Seine, gave an account of the administrative organisation of health committees in France. He described the arrangements of the Ministry of Health for prophylactic measures to be adopted during the occurrence of epidemics, and emphasised methods to be employed as a routine for the prevention of tuberculosis. He showed in what way the administrative committee had intervened in the application of the law concerning these matters. Mons. Guillon also pointed out that so far health committees had only to approach the county council authorities before issuing instructions, but that ultimately they might not have so much initiative since they might in the future have to work within the limits of the special resolutions set out by the Ministry of Health.

National Health Insurance for France.

The possibility of the adoption in France of a system of national health insurance such as that of Great Britain under the National Insurance Act, 1911, has aroused considerable interest in medical and political circles over here. The suggestion originated from the fact that such a system was introduced in Alsace when this formed part of the German Empire, and it is still being administered by Alsatian Committees. It is on account of this sort of administrative divergence that Alsace is not yet assimilated to French counties from an administrative point of view.

Jubilee of the Académie de Médecine.

On Dec. 20th the members of the Académie de Médecine will commemorate the centenary of the creation of this academy. The late Professor Debove, whose death we announced recently, had been its permanent secretary for the last seven years, and in spite of his illness had taken a prominent part in the organisation of the official ceremony which will take place.

The late Monsieur Charles Infroit.

Mons. Charles Infroit, chef du Laboratoire Central de Radiologie de la Salpêtrière, died recently at the age of 46. He was a well-known radiographer, who in 1908 began to suffer from occupational dermatitis. Owing to this ailment several of his fingers had to be amputated in the course of the year 1910. In spite of his condition he never ceased to give his valuable services during the war. He finally lost the use of both arms, his only available arm having been recently amputated high up. In spite of this operation he died; his general condition had become precarious and had left little hope of his ultimate recovery.

Dec. 13th.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENTS.)

Gradual Resumption of Peace Conditions.

THERE is a common belief in the late belligerent countries that neutrals, seizing an opportunity to profiteer, amassed huge fortunes during the war. Intact man-power and the absence of devastated areas are the chief advantages resulting from neutrality; apart from these the losses and gains are probably equal. At present we suffer, like our neighbours, from high prices, social unrest, and unemployment, and in addition one of our industries—hotel-keeping—is completely ruined. The travelling public all over the world has been reduced, and as the Swiss exchange is heavily against all other countries except Great Britain and the United States, few foreigners can afford a journey to Switzerland. No rapid improvement can be looked for in this connexion, and the adaptation of some of the

big hotels to other purposes has already begun. A scheme is now under discussion for altering the well-known Hotel Thunerhof at Thoune into an institution for the care of the aged under the city corporation of Berne. Health centres like Davos and Arosa are equally hard hit, their number of visitors being about one-third of the pre-war figure. The only exceptions are high stations like Zermatt, Grindelwald, the Engadine, &c., which have a winter season. This year a fair number of visitors are expected for the winter sports. Passport regulations have lately been greatly simplified; the Swiss Legation in London has been instructed freely to grant visas available for a stay of two months. Tourists are no longer required to register personally at a police station; they have only to sign the register at their respective hotels and can leave the country without further formalities. The railway facilities have been much improved since last year. Very convenient through trains to Switzerland are run both from Calais via Rheims twice a week and from Ostend via Strasbourg daily. When travelling via Ostend the passport must be visé by both French and Belgian authorities. We wish that control at the frontiers could be altogether abolished, but here, as in other matters, the lead must come from our greater neighbours.

The Society of Swiss Alienists.

The 59th anniversary of the society was celebrated by a meeting in Zurich on Nov. 27th and 28th, at which over 120 medical men were present. Professor H. W. Maier (Zurich), as chairman, extended a special welcome to representatives of various other medical societies and to the 12 visitors from Austria and South Germany. He sincerely hoped it would in future be possible to renew the pleasant and fruitful international exchange of ideas, which was interrupted by the war. Dr. H. Zangger, professor of forensic medicine (Zurich), spoke on accidents occurring to the insured out of working hours, with special reference to neuroses and psychoses. He mentioned that these accidents were more frequent than those occurring during working hours, causing heavy expense to the Federal Insurance Society.—Dr. M. Cloetta, professor of pharmacology (Zurich), gave an address on the difference of action of various narcotics, and strongly advocated the use of hypnotics in pain or sleeplessness.—Professor Maier referred to a number of invalid soldiers, amounting to about a hundred, who had demanded compensation from the State, and had been for months and years backwards and forwards from the medical practitioner to the hospitals, convalescent homes, and sanatoria. In reality, only 14 of their number deserved compensation.—Dr. Klaesi (Zurich) and Dr. Demole (Bel Air) recommended somnifen,[1] a new preparation akin to veronal, for deep subcutaneous or intravenous injections, to produce sleep for from six to ten days in cases of dementia præcox. So rapid was improvement after this sleep in some severe cases that patients could be dismissed in from two to four weeks. In other cases the desirable and necessary contact between patient and doctor could more easily be established and psychological treatment begun with success.—Dr. Répond, director of the Valais Cantonal Asylum, made an urgent appeal for a more careful and zealous psychological treatment of chronic cases of dementia præcox. Medical men and nurses must act in unison and with optimism. His own results, combined with dismissal of cases from the asylum as soon as the acute symptoms remitted, were excellent.—Professor E. Bleuler (Zurich) demanded that alienists should by word and example unite in combating the increasing ravages of alcohol. In 1913 123 fresh cases of alcoholism were admitted to the Zurich cantonal asylum. This number decreased slowly to 53 in 1919. The approximate number for 1920 was already 139, owing to the renewed importation of strong beer and spirits.—Professor Gauss, of Tübingen, said that during the war no cases of alcoholism were admitted to his clinics, so that he could not demonstrate the condition to his students, but the number was now rapidly increasing. He begged alienists to unite in order to enforce restrictive legislation with regard to the manufacture and sale of alcohol.—Drs. Morgentaler (Münchenbuchsee), Bezzola (Samaden), Bimswanger (Kreuzlingen), Glaus (Zurich), and Forel, jun. (Waldn) read short papers.

[1] Manufactured by La Roche, Bâle.

Venereal Disease.

Venereal diseases were not very frequent in Switzerland before the war, probably because we have no large towns and no regular army. Recently, however, a marked increase has taken place in its frequency, and two years ago a society was formed for combating venereal diseases. In order to get a real knowledge of the frequency of the diseases this society has urged the Federal Department of Health to arrange a census, and the department has taken the matter up. During the current year, which began on Oct. 1st, 1920, venereal diseases have been declared notifiable, a notification fee being paid by the State. By October, 1921, we shall know exactly where we stand, and have some indication of how to deal with this social evil. In the meantime a very active propaganda is being carried on by means of lantern lectures and pamphlets.

Dec. 10th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

The Fight against Plague.

THE Government of India, in inaugurating a campaign for combined action for extirpating plague, expressed the belief that the extermination of bubonic plague is a matter merely of determined and organised effort, and in adopting this view they have abundant scientific evidence behind them. In his report, "Twenty Years of Plague in India," published in 1918, the Sanitary Commissioner with the Government of India wrote:—

"If educated people would unite in an effort to inculcate far and wide some idea of the significance of the statement that 10 million people in India have fallen victims to plague; of the economic loss that India has suffered from the ravages of plague; of the wholesale disorganisation to which industry is liable for several months in severe plague years; of the absolute dependence of plague epidemics on rat infestation; and of the very considerable loss suffered as a result of the depredations of rats, the Indian plague problem would find a ready solution. Of all the preventable diseases none is more preventable than is bubonic plague."

Apart altogether from the loss of human life, it is estimated that the economic loss to India through the depredations of rats would pay for the cost of the defence of the country twice over. That is a consideration which should appeal to the advocates of economy in the legislative councils..

Statistics of Infectious Disease.

The recent reports of incidence and deaths from cholera, small-pox, and plague in India show that in Bihar and Orissa there were 803 deaths from the first disease and 134 from the second. Madras stands next with 637 deaths from cholera and 245 from plague. Bombay has surrendered as many as 227 to plague and 57 to cholera and small-pox. But there is a total absence of plague in Bengal.

Sanitation in the Central Provinces.

The resolution of the Central Provinces Administration on the annual report of the Sanitary Department contains some interesting observations on child mortality, which, calculated on the number of births registered during the year, stood at the high figure of 299 per 1000, as against 227 in 1917. The solution of this problem of child welfare, as the resolution pertinently points out, must be a slow and difficult task, and success can only be hoped for when the leaders of the people have learned to take an active and personal interest in it. Education in the elements of hygiene and of modern sanitary principles, and the awakening of the conscience of municipal committees to a realisation of their public duties must be the first care of the popular representatives.

Lucknow and Allahabad Medical Associations.

At a meeting of the Allahabad Medical Association held on Oct. 30th strong disapproval was expressed of

the recommendations of the Army in India Committee and the Medical Service Reorganisation Committee regarding the future constitution of the medical service in India. Both sets of recommendations, it was urged, ignore the Indian point of view, and seek to perpetuate the present anomalies, which make for inefficiency, based upon racial discrimination. The Association advocates:—

(1) That there should be two distinct medical services, military and civil, wholly independent of each other, open on equal terms both to Indians and Englishmen, and recruited both in India and England, the civil service mainly in India. Members of the Indian Military Medical Services should not, as a rule, be appointed to any posts in civil administration.

(2) Either the distinction between Indian and Provincial Medical Services should be done away with or a definite proportion of the posts in the Indian Civil Medical Service should be filled by promotion from the Provincial Medical Service.

(3) To meet military exigencies in time of war every member of the Civil Medical Service should be liable to undergo military training and to undertake field service.

The meeting concluded by endorsing the resolution of the Lucknow Medical Association in the following form:—

Resolved, that Indian medical practitioners should not meet in consultation the members of the Indian Medical Service in private practice when others of equal or better merit are available.

MEDICINE AND THE LAW.

Professional Secrecy in the American Courts.

THE *Journal of the American Medical Association* calls attention to a recent decision of the Supreme Court of Nebraska on a question arising out of the disclosure to a third person by a medical man of a disease from which one of his patients was believed by him to be suffering. From the article before us the cause of action appears to have depended upon the alleged betrayal of a professional secret to the detriment of a patient, and it is stated that the case is the first of its kind to come before an American court of final appeal. It arose out of the visit of the plaintiff to a hotel, where he became ill and called in a medical practitioner. This gentleman is described as having been "the physician of the hotel," and as such to have regarded it as his duty to inform the manageress of the hotel that one of her guests was suffering from a disease with which he might infect others. The plaintiff was accordingly asked to leave the hotel, and having found that the diagnosis of the medical man was not confirmed upon further examination by others he brought an action against him for damages. In England the action in such a case would have been for slander, and the principal question of law would have been the degree of privilege to be accorded to the communication made. This does not seem to have been the case in the Court of Nebraska, and the observations of the Court of Appeal quoted are chiefly of interest as bearing upon medical ethics. The court appears to have laid down that information given to a medical man by his patient, though confidential, is subject to the understanding that if the patient's disease is found to be so highly contagious or infectious that it may be transmitted to others, unless the dangers of transmission are disclosed, then the medical man is warranted in making so much of a disclosure to such persons as is reasonable and necessary to prevent the spread of the disease. This recognises the fact that while a medical man owes a duty to his patient to respect his confidence he owes a duty, and a greater duty, to the public. It is added that any steps taken by him must be taken in good faith on reasonable grounds and without personal malice, and that if these precautions are taken the medical man cannot be held liable even if he has made a mistake in his diagnosis. Close comparison between the case in question and any that might arise in this country is rendered difficult by the position of "physician of a hotel" not having any close parallel here, and by the fact that in the United Kingdom such infectious diseases as are dealt with by isolation of the patient are the subject of statutory law which lays down the course to be pursued. The nature of the disease (syphilis) from which the plaintiff was believed to be suffering in the case under discussion would hardly be deemed with us to lay an obligation on any medical man attending a patient to inform the management of the hotel at which he was a visitor, though the particular symptoms presented might make it needful to warn the patient of his duty to be exceedingly careful.

A Proposed Municipal Laundry.

The importance of the cleansing of underclothing and fabrics in domestic use from a sanitary point of view renders interesting the judgment recently delivered by Mr. Justice Sargant in the case of the Attorney-General *v.* Fulham Corporation, the Attorney-General bringing the action at the instance of a ratepayer of the borough. The point at issue arose out of a proposal by the borough council to set up a laundry, in which it would undertake to wash for ratepayers. This it claimed to be entitled to do under the Baths and Washhouses Acts, under which, being within its rights in doing so, it had already provided washhouses. The difference would be that in the washhouses a number of washing-troughs were provided, and to these women brought their "wash" and dealt with it. The council supplied hot water through its servants, and wringing machines also worked by them. The laundry proposed would have been what is ordinarily understood by the term, and the washing would have been done entirely by the corporation's servants. Mr. Justice Sargant made a declaration that the defendant corporation was not entitled to carry out its proposal, and granted an injunction to restrain it from doing so. In dealing with the law which should be followed by a judge in deciding what is or is not ultra vires, where more or less defined powers are given by law, he cited with approval a judgment of Lord Selborne, delivered in 1880 in the case of the Attorney-General *v.* The Great Eastern Railway. The late Lord Chancellor there laid it down that the doctrine to be reasonably applied was that "whatever may fairly be regarded as incidental to, or consequent upon, those things which the legislature has authorised ought not (unless expressly prohibited) to be held by judicial construction to be ultra vires." In applying this Mr. Justice Sargant was of the opinion that the scheme of the Baths and Washhouses Acts was to afford facilities for persons to do their own washing, and pointed out that the new scheme of the defendant council was not to provide facilities for the washing by persons of their own clothes, but for washing to be performed by the servants of the council itself. This, he considered, was not incidental to or consequent upon what was authorised by the Acts.

Suicide and Compensation.

In the case of Marriott *v.* Maltby Main Colliery Co. judgment in which was recently delivered by the Court of Appeal, the workman, a miner, having severely injured his hand, had become very depressed as to his power to resume work, and after he had been persuaded to do so had been unable to shake off the depression. Finally he committed suicide on Feb. 28th, having received the injury in the preceding November. Upon a claim for compensation for his dependents the medical evidence had been that the mind of the deceased was "perturbed" by his accident, and that the perturbation got worse, his condition becoming neurotic. Expert evidence by a medical man, who had not seen the patient, was to the effect that to judge from the facts and symptoms described, the accident had given the man a shock, and the shock and suffering had resulted in melancholia, which had been the first stage of insanity. The county court judge had awarded compensation on the ground that the workman had committed suicide by reason of insanity which was the result of the accident. The Master of the Rolls, in delivering judgment on the appeal, said that to justify such a finding it must be proved that the suicide was the result of the accident, and not only of brooding over the injury. It must result from the injury and not from the state of mind caused by the injury. The Court of Appeal was not, however, concerned with the question whether it would have come to the same conclusion as the county court judge, but only with the

question whether there was evidence before him upon which he could find as he did. In the case in question the medical evidence seemed to his lordship to show that there was a mental shock caused by the accident and that this was followed by melancholia, which culminated in insanity. Mental shock, if sufficiently serious in its effects, might, without there being any apparent physical or structural injury, be the subject of compensation, and there was evidence in the case from which the county court judge might have found that the melancholia arose through the shock of the accident, and not merely through the man's mind brooding over it. If there was evidence of that there was the authority of Lord Justice Cozens Hardy in the case of Withers *v.* London, Brighton, and South Coast Railway, (1916) 2 K.B. 772, that that would be ground of compensation. In that case Lord Justice Hardy said that he felt no doubt at all as to whether suicide could be the result of an accident within the Workmen's Compensation Act. The appeal of the colliery company against the county court judge's decision was accordingly dismissed, the other Lords Justices concurring with the Master of the Rolls. In comment it may be said that if to the non-legal mind the distinction between melancholia and suicide caused by the accident, and the same conditions caused by brooding over it, may seem finely drawn, the result arrived at would appear to be that in such a case there must be medical evidence to show that the accident made an alteration in the subject's mental condition, leading by progressive development to the state of mind responsible for his committing suicide.

URBAN VITAL STATISTICS.

(Week ended Dec. 11th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had been 12·8, 13·5, and 13·2 in the three preceding weeks, fell to 12·9 per 1000. In London, with a population of nearly 4½ million persons, the death-rate was 12·9, or 0·2 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 5·1 in Coventry, 5·4 in Oxford, 5·9 in Acton, and 6·4 in Ealing, to 19·1 in Wigan, 20·0 in Blackpool, 21·2 in Exeter, and 22·4 in Sunderland. The principal epidemic diseases caused 191 deaths, which corresponded to an annual rate of 0·6 per 1000, and comprised 88 from diphtheria, 37 from infantile diarrhœa, 26 from measles, 22 from whooping-cough, 16 from scarlet fever, and 2 from enteric fever. Diphtheria caused a mortality of 1·8 per 1000 in Exeter and 2·0 in Ipswich. There were 5297 cases of scarlet fever and 2654 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 5438 and 2655 respectively at the end of the previous week. The causes of 39 of the 4408 deaths in the 96 towns were uncertified, of which 12 were registered in Birmingham, and 3 each in Liverpool, Warrington, Manchester, and Sunderland.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 13·6, 14·3, and 13·5 in the three preceding weeks, rose to 15·2 per 1000. The 336 deaths in Glasgow corresponded to an annual rate of 15·7 per 1000, and included 5 from infantile diarrhœa, 4 from diphtheria, and 1 each from small-pox, scarlet fever, and whooping-cough. The 108 deaths in Edinburgh were equal to a rate of 16·5 per 1000, and included 3 from measles and 2 from diphtheria.

Irish Towns.—The 144 deaths in Dublin corresponded to an annual rate of 18·1, or 3·5 per 1000 above that for the previous week, and included 4 from infantile diarrhœa and 1 from scarlet fever. The 118 deaths in Belfast were equal to a rate of 14·9 per 1000, and included 3 each from infantile diarrhœa, diphtheria, and scarlet fever, and 1 each from whooping-cough and enteric fever.

Corrigendum.—In THE LANCET of Dec. 11th there appeared on page 1218, under the heading "Plague Prevention in Liverpool," the following statement: "In the port of Liverpool 310 rats were examined bacteriologically, and 20 of this number were found to be plague-infected." The number of rats examined should have read 7310.

Sir **Donald MacAlister, K.C.B., President of the** General Medical Council, has been elected an honorary member of the Liverpool Medical Institution.

Correspondence.

"Audi alteram partem."

THROAT OPERATIONS ON OUT-PATIENTS.

To the Editor of THE LANCET.

SIR,—The annotation under this heading in THE LANCET of Dec. 11th on the death of a child who died after operation for tonsils and adenoids, in which is cited an observation by the coroner, Dr. Waldo, that the child ought to have been detained in hospital for a day or two, raises a question of very great import. Mr. E. Watson-Williams has reported[1] one death resulting from complications in a child operated on and sent home and shows that serious morbidity following tonsil operations in my clinic are much more frequent in those who are not detained in hospital as compared with those who are kept in hospital for a few days after operation. The significance of the figures he cites is all the greater from the fact that stringent precautions have for many years past been laid down with a view to lessening the risks of sending cases out the same day as they are operated on.

It is quite true that the restricted accommodation provided in the great majority of hospitals renders it impossible to take all the children in who undergo operations for tonsils and adenoids, but it is a grave reflection on our methods if, without a very serious protest, we continue to acquiesce in present procedure. Deaths are very infrequent after operations for tonsils and adenoids and still more rarely can they be attributed to the patient being sent home instead of being taken in for a few days, but serious morbidity is far less uncommon. Even with the advantages of skilful attention and warm healthy homes, few of the well-to-do would care to have their children operated on at a hospital and sent home in a cab, 'bus, or train within a few hours; and certainly it is far worse to have these children conveyed back to homes which are often very unhygienic, not seldom overcrowded, and where it is sometimes impossible to avoid serious risks of infection. The cost of providing beds for the detention in hospital of these children may be considerable; but it is clearly incumbent on authorities, who are charged with recommending and insisting that school children are to have their tonsils and adenoids removed, equally to insist on the proper provision of facilities for the treatment being done under fair conditions. I trust that the subject of Mr. E. Watson-Williams's communication will receive the consideration it merits.—I am, Sir, yours faithfully,

Clifton, Dec. 11th, 1920. P. WATSON-WILLIAMS.

THE MOTOR PHENOMENA OF CHOREA.

To the Editor of THE LANCET.

SIR,—In the Bradshaw lecture on Chorea, published in THE LANCET of Nov. 27th, Dr. Cecil Wall honours me by referring to my paper, written in 1899, on Certain Variations in the Motor Phenomena of Chorea. Dr. Wall's lecture is to me most interesting, and I cordially agree with his conclusions. But there is one point to which I should like to refer—namely, the suggestion that some of my cases might possibly not now be classified as examples of Sydenham's chorea. The suggestion is a perfectly legitimate one, and I have carefully considered it. But I have a very clear recollection of the cases, and I was very much alive throughout my study to the possibility of confusion in diagnosis. I am therefore quite sure that cases of habit-spasm and post-hemiplegic chorea were not included, and that, whilst the great majority of the cases gave the expected result of increase in movement during the attempt to write, here and there true cases of Sydenham's chorea were met with in which the variations I described were observed.

I am, Sir, yours faithfully,

Birmingham, Dec. 14th, 1920. JAS. W. RUSSELL.

[1] "The Risks after Operation for Tonsils and Adenoids in Outdoor Clinics," read at the British Medical Association Branch meeting at Bristol in October.

LOSS OF SPEECH FOLLOWING AN ANÆSTHETIC.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Dec. 11th Surgeon Lieutenant-Commander A. B. Clark, R.N., records an interesting case of loss of speech following an anæsthetic and invites information as to similar cases. I recorded such a case in THE LANCET for May 20th, 1916, under the title "Hysterical Mutism in a Boy." In this case complete loss of speech followed an operation, under anæsthesia, for enlarged tonsils and adenoids. I did not at the time attribute this especially to the anæsthetic, nor do I think that, per se, it played any important rôle in producing the condition.

The factors common to the two cases which seem to be of primary importance are the "nervous temperament" and an "undue dread of operation." It is true that in Commander Clark's case the anæsthesia was very prolonged, but in my case it was very brief, and yet the following loss of speech was more complete and more lasting than in his case. A reference to the record of my case may explain this difference, for the preceding nervous history was very remarkable. I quite recognise that the character of the loss of speech differed considerably in the two cases, and such difference is not without interest in itself.

I am, Sir, yours faithfully,

Sheffield, Dec. 12th, 1920. ARTHUR J. HALL.

To the Editor of THE LANCET.

SIR,—Surgeon Lieutenant-Commander A. B. Clark's note recalls to my memory a case I met with some years ago. My colleague, Mr. Rushton Parker, had operated on a girl for tuberculous disease of a hip-joint. The patient remained in a state of stupor after the operation, and I saw her about two hours later; she was then partially conscious and vomiting, but, the nurse said, would not speak. She proved to be aphasic, the pupils were dilated and irregular, there was no sign of any paralysis. The nature of the case was rendered evident by the fortunate presence and discovery of a tubercle in the choroid of one eye. The girl, as the choroid tubercle indicated, had a latent tuberculosis of the cerebral membranes as well as the tuberculous hip-joint. It seems likely that the congestion of the brain attending the narcosis, coupled with the tuberculous condition of the membranes, kindled a meningitis. Motor aphasia is not infrequent in tuberculous meningitis, owing to the tendency of the tubercles to follow the course of the middle cerebral arteries and their ramifications.

I am, Sir, yours faithfully,

University of Liverpool, Dec. 13th, 1920. T. R. GLYNN.

A CASE OF TRISMUS NEONATORUM.

To the Editor of THE LANCET.

SIR,—The circumstances of a recent case of tetanus disclosed in the Portsmouth coroner's court, though fortunately rare, presents points of practical interest to medical men. A medical practitioner informed me that a five-day-old baby that he had been called in to attend had presented unmistakable symptoms of tetanus, and in spite of injections of antitetanus serum had died on the next day. The condition of the umbilicus satisfied him that this was the site of the infection, and he came to the conclusion that infection must have been conveyed through the medium of some vaseline which a nurse had applied to the cord at birth; he had therefore reported the case to the coroner and brought the pot of vaseline to me for examination for the presence of tetanus bacilli. I forwarded the pot to the Ministry of Health, and in due course received a report that tetanus bacilli had been found in the top portion of the vaseline—i.e., from that part which had apparently been smeared by the finger of the midwife. Subsequent examination of the deeper part of the vaseline failed to discover the bacillus.

To assist in deciding as to whether the tetanus bacill were present in the vaseline when purchased, or whether they had been accidentally introduced after the pot had been opened, I obtained from the retailer seven other pots of vaseline from the same consignment and submitted these also, unopened, to the Ministry. I received a report from the Ministry's laboratory that in each case the vaseline, though not quite sterile, yielded in culture only non-pathogenic leptothrix-like micro-organisms, but that "Inside the screw tops of these pots there are paper discs which act as washers between the glass and the metal. From this coarse grey paper anaerobic spore-bearers of several species have grown in every case; the species include bacteria resembling, microscopically, *B. welchii* and *B. tertius*, but these have not been completely identified. One paper disc, however, yielded, in addition, typical tetanus bacilli possessing full pathogenicity."

Although one cannot definitely state that every other possible source of infection has been excluded, yet, in view of tetanus bacilli being found in the pot of vaseline which had been used, and in view of the results obtained from the examination of the other pots of vaseline, there seem strong grounds for presumption that in this case the vaseline which had been applied to the umbilical cord had been infected with tetanus bacilli from the paper disc, and had thus proved to be the vehicle of infection. This, indeed, was the view taken at the adjourned inquest held on Monday last, Dec. 13th, when the deputy coroner (Mr. Philip H. Childs), after hearing the evidence, found that the cause of death was tetanus which had been conveyed in the vaseline.

I have communicated the whole of the circumstances to the Ministry of Health, and the latter have been in communication with the manufacturers of the vaseline. The latter were represented at the inquest by Mr. W. J. H. Brodrick, who stated that although his clients did not admit that the vaseline was the cause of death, yet they were taking steps which the Ministry of Health considered adequate to prevent the occurrence of such a possibility in the future.

I am, Sir, yours faithfully,

A. MEARNS FRASER, M.D.,

Dec. 14th, 1920. M.O.H. Portsmouth.

LOCAL ADVISORY MEDICAL COUNCILS.

To the Editor of THE LANCET.

SIR,—In the first annotation of THE LANCET for Dec. 11th a tentative claim to priority in the establishment of a medical advisory committee is made on behalf of Bradford. May I remind you that Gloucestershire has had a medical advisory committee for some months? Your readers may also be interested to know that for over a year Bristol has had a medical committee elected on a fully representative basis, by a postal vote of all the practitioners in the city. These were divided into groups as follows: members of the Bristol panel, general practitioners not on the panel, women practitioners, whole-time administrative officers, members of general hospital staffs, and members of special hospital staffs. Each group elected one-tenth of its number to serve on the committee. The committee has been able to advise certain public bodies as to the views of the local medical profession, and also to bring the various sections of the profession into touch with each other. Further extensions of these activities may be looked for in the future.

I am, Sir, yours faithfully,

CAREY COOMBS,

Dec. 13th, 1920. Hon. Secretary, Bristol Medical Committee.

PSYCHICAL REPRESSION.

To the Editor of THE LANCET.

SIR,—I venture to take the liberty of trespassing on your space with regard to Dr. W. H. B. Stoddart's letter under the above heading, which appeared in your issue of Nov. 27th in reply to an article of mine which you published some weeks ago. Dr. Stoddart's description of Freud's subdivisions of the unconscious is, of course, perfectly orthodox. I omitted such a description in my paper for the very reasons he mentions—namely, brevity and simplicity, and also because the matter was

scarcely involved in the particular points I was trying to make.

It is not for me to criticise the lucidity of Dr. Stoddart's explanation, and I can only say that I fear that by no means all of the confusion to which I referred is attributable to the specific source he mentions. I should like, however, to add one word about those British psycho-analysts who, as Dr. Stoddart reminds us, "have taken the hint, and speak or write among themselves of the 'con' and the 'unc'." To charge those who engage in this pastime with sacrificing their sense of humour is perhaps unfair, as scientific accuracy is, doubtless, worth even such a great sacrifice. It should be made quite clear, however, that the "hint" which they have taken did not come originally from Freud, as Dr. Stoddart seems to think. The contraction method was suggested many years ago by Mr. Harry Graham, who extolled its virtues in the following words, which are delightfully appropriate to the present situation:—

"My sense remains as clear as cryst.,
My style as pure as any Duch.,
Who does not boast a bar sinist.
Upon her fam. escutch.
And I can treat with scornful pit.
The sneers of every captious crit."

Those who "speak or write among themselves of the "'con' and the 'unc'" are merely accepting Mr. Graham's invitation to—

"Share with me the grave respons.,
Of writing this amazing nons."

I am, Sir, yours faithfully,

HENRY YELLOWLEES, M.D.

Craig House, Edinburgh, Dec. 8th, 1920.

PS.—The idea might well be expanded, but I am unfortunately called away to see my poor unc. who has inadvertently swallowed the con. of a bot. of furn. pol.

"SAVE ME FROM MY FRIENDS."

To the Editor of THE LANCET.

SIR,—My attention has been called to a highly eulogistic paragraph in the personal column of an issue of the *Times* of recent date. I am quite without information as to the origin of this unfortunate effusion, which, however, is an example of how much more easily one can be injured by one's friends than by one's enemies.

In view of the most improper disclosures which the insertion makes, from the ethical standpoint, I shall be much obliged if you will note my entire repudiation of any knowledge in the matter.

I am, Sir, yours faithfully,

FRANCIS H. EDWARDS,
Medical Superintendent, Camberwell House,
Peckham-road, S.E.

Dec. 9th, 1920.

The Services.

ROYAL ARMY MEDICAL CORPS.

Major R. N. Hunt relinquishes the acting rank of Lieutenant-Colonel.

Temp. Capt. S. Stockman relinquishes the acting rank of Major.

Capt. G. K. Maurice, from T.F., to be Captain.

Temp. Lieut. W. C. McKee to be temporary Captain.

The undermentioned relinquish their commissions: Temp. Lieut.-Col. S. Mort, on ceasing to be employed at the Edmonton War Hospital, retains the rank of Lieutenant-Colonel.

Temporary Captains granted the rank of Major: (acting Major) H. McIntyre, W. W. Forbes, and L. C. E. Murphy and T. B. Johnstone (retain the rank of Captain).

TERRITORIAL FORCE.

Capts. A. L. Heiser, J. C. Grieve, and J. B. Stanley to be Majors.

Capt. W. Johnson (late R.A.M.C., S.R) to be Captain.

Capt. J. W. Wayte (late temp. Capt. R.A.M.C) to be Lieutenant and to relinquish the rank of Captain.

4th London General Hospital: Capt. A. H. Evans is restored to the establishment.

Officers resigning their commissions:—Lieut-Col. W. M. Gabriel retains the rank of Lieutenant-Colonel with permission to wear the prescribed uniform. Major R. C. Rodgers retains the rank of Major, with permission to wear the prescribed uniform. Major R. Fager retains the rank of Major. Capts. G. F. Stones and W. R. M. Turtle retain the rank of Captain.

TERRITORIAL FORCE RESERVE.

Capt. F. G. Dobson, from 2nd West Riding Field Ambulance, to be Lieutenant-Colonel.

ROYAL AIR FORCE.

Dental Branch.—Lieut. D. Campbell is transferred to unemployed list.

Medical News.

UNIVERSITY OF OXFORD.—At the Second Examination for the degree of Bachelor of Medicine the following candidates passed in the subjects named:—

Materia Medica and Pharmacology.—Dorothy Josephine Collier, Society of Oxford Home Students; Dorothy Whitley Crook, Somerville College; John Hampson Fletcher, Trinity; Edward Henry Koerner, Magdalen; Charles Hardeman Laver, University; Duncan Gerald Leys, Balliol; Thomas Sydney Nelson, University; Jean Orr-Ewing, Lady Margaret Hall; Horace Duncan Pavière and Insall Martin Sidley, Christ Church; Cecil Henry Terry, Balliol; Clement John Lethbridge Wells, St. John's.

Pathology.—Cyril William Curtis Bain, Christ Church; Charles Frederick Terence East, New; Humphrey Cheetham Hill, Hertford; Robert Folster Johnstone, St. John's; Charles Hardeman Laver, University; Edward George Tandy Liddell, Trinity; Jean Orr-Ewing, Lady Margaret Hall; Daniel Bartholomew Pauw, Trinity; Cecil Henry Terry, Balliol; William Stephen Tunbridge, Lincoln; Clement John Lethbridge Wells, St. John's; and William Arthur Young, Jesus.

Forensic Medicine and Public Health.—Harold George Burford, Christ Church; Charles Cecil Howard Chavasse, Hertford; David George Turner Kerr Cross, St. John's; and Charles Frederick Terence East, New College.

Medicine, Surgery, and Midwifery.—Charles Keith Johnstone Hamilton, Lincoln; Isaac Harris and John Trevor Stevenson Hoey, Jesus; William Frederick Skaife, Trinity; Cecil Henry Terry, Balliol; and Clement John Lethbridge Wells, St, John's.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on Dec. 9th, when Sir Anthony Bowlby occupied the chair.—A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship, in which it was stated that at the examination concluded on Nov. 13th 166 candidates were examined, including 33 admitted under the special war conditions, of whom 24 were successful, and 133 admitted under the ordinary conditions, of whom 47 were successful.—A report was read from the Court of Examiners respecting candidates found qualified for the Diploma of Fellow, the Final Examination for which was held from Nov. 18th to Dec. 2nd, when 122 candidates presented themselves, 43 of whom were approved (41 men and 2 women) and 79 were rejected. The Council conferred the Diploma upon the candidates mentioned below.—Sir William Thorburn reported that the Court of Examiners had decided to hold a Final Examination for the Fellowship on Feb. 15th next and following days, the written part of the examination to take place on Feb. 11th.—A report was read from the Board of Examiners in Dental Surgery, and Licences in Dental Surgery were granted to 32 candidates (see below) who have passed the requisite examinations and complied with the by-laws.—Mr. C. H. Fagge was elected a member of the Court of Examiners. Mr. Raymond Johnson was elected a member of the Board of Examiners in Dental Surgery. Mr. F. F. Burghard was appointed to represent the College on the Senate of the London University to fill the vacancy occasioned by the resignation of Sir Charles Ballance. Sir Anthony Bowlby and Sir John Bland-Sutton were appointed to represent the College on the Conjoint Board of Scientific Societies for the year 1921.—It was resolved to accept the offer by the executors of the late Mrs. Owen of the bust of the late Sir Richard Owen.—The President reported that the centenary celebrations of the French Academy of Medicine would be held in Paris from Dec. 20th to 23rd, and it was agreed that the delegates of the College should be requested to present an address of congratulation on that occasion.

The Council conferred the Diploma of Fellow upon the following candidates:—

A. L. Abel, Univ. Coll. Hosp.; E. M. Atkinson, St. Bart.'s Hosp.; H. H. Bailey, London Hosp.; C. F. Beyers, St. Bart.'s Hosp.; A. H. F. Bizarro, Lisbon and Univ. Coll. Hosp.; R. St. L. Brockman, Cambridge Univ. and St. Bart.'s Hosp.; C. L. Chapman, Sydney Univ. and London Hosp.; D. G. Churcher, St. Thomas's Hosp.; Hetty Ethelberta Claremont, St. George's and St. Mary's Hosps.; A. J. Cokkinis, St. Mary's Hosp.; L. P. Costobadie, Cambridge Univ. and London Hosp.; C. H. Crawshaw, Manchester Univ. and St. Bart.'s Hosp.; P. P. Debono, Malta and St. Bart.'s Hosp.; W. M. Dickson, Edinburgh Univ. and London Hosp.; L. A. Dingley, Univ. Coll. Hosp.; H. H. Dummere, London and Guy's Hosps.; G. E. Elkington, Birmingham Univ. and St. Bart.'s Hosp.; R. H. Fleming, Middlesex Hosp.; P. K. Gilroy, Cambridge Univ. and St. George's Hosp.; F. K. Hayman, Bristol Univ. and St. Bart.'s Hosp.; S. W. M. Jones, Middlesex Hosp.; G. L. Keynes, Cambridge Univ. and St. Bart.'s Hosp.; E. A. Lindsay, McGill Univ. and Middlesex Hosp.; R. J. M. Love, London Hosp.; P. G. McEvedy, Guy's Hosp.; R. H. Maingot, St. Bart.'s Hosp.; C. D. Maitland, St. Thomas's Hosp.; F. D. Marsh, Cambridge Univ. and St. Bart.'s Hosp.; H. H. Mathias, Cambridge Univ. and London Hosp.; O. G. Morgan, Cambridge Univ. and Guy's Hosp.; J. E. Pearce, St. Bart.'s Hosp.; V. C. Pennell, Cambridge Univ. and St. Thomas's Hosp.; R. L. Rea, Belfast and Middlesex Hosp.; N. L. M. Reader, Guy's Hosp.; Hilda Nora Shufflebotham, Birmingham Univ. and London

Hosp.; T. H. Somervell, Cambridge Univ. and Univ. Coll. Hosp.; L. A. Spedding, New Zealand Univ. and St. Mary's Hosp.; R. F. Standage, St. Bart.'s Hosp.; J. B. Stanley, Birmingham Univ. and London Hosp.; H. E. R. Stephens, Manchester Univ. and London Hosp.; J. W. Stretton, St. Bart.'s Hosp.; D. G. C. Tasker, Bristol Univ. and London Hosp.; and D. Watson, Edinburgh Univ. and London Hosp.

Licences in Dental Surgery were conferred upon the following candidates:—

W. B. S. Andrew, Royal Dental; H. Ashling, C. G. Atkinson, A. C. Ayling, and S. Bremner, Guy's; L. A. Brown, Royal Dental; H. G. R. Canning, H. V. Croucher, S. W. A. Davis, D. T. G. Dickens, F. J. Downing, J. J. du Toit, and I. Freiberger, Guy's; J. S. R. Heath, Royal Dental; R. J. Hooker and H. L. Ide, Guy's; I. Jacobs, Bristol; Violet Ruth Jeffery, Royal Dental; J. L. Lean, Guy's; B. Leathlean, Bristol; L. Lyon, E. H. Muir-Smith, C. S. Neame, A. T. Partridge, and W. J. Pretorius, Guy's; Eveline Mary Russell, National Dental; S. W. Southwood and A. L. Spencer-Payne, Guy's; F. A. L. Sturridge, Pennsylvania; E. F. Vowles, Bristol; and W. H. Willis and B. C. Woodroffe, Guy's.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty, held on Dec. 6th, the following were admitted, after examination, as Fellows of Faculty:—Peter Hamilton Robertson, M.B., Ch.B., Glasgow; and John Noonan Meade, L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., D.P.H., Ayr.

MEDICAL COMMISSIONS ON VENEREAL DISEASE.—The medical commission appointed under the aegis of the Colonial Office and the Ministry of Health to visit Gibraltar and Malta sailed on Friday last. The object of the commission, which is under the charge of Dr. Kenneth M. Walker, is to investigate the venereal problems in Mediterranean ports with a view to improving facilities for the treatment of cases occurring in the Mercantile Marine. A report is likely to be presented in about five weeks.

A Commission consisting of Dr. Rupert Hallam, Mrs. C. Neville Rolfe, and Miss E. O. Grant has been sent by the National Council for Combating Venereal Diseases, with the authority of the Colonial Office, to study the social conditions and the steps to be taken locally to combat venereal disease in the East. The Commission is travelling via Canada, and the Canadian Council for Combating Venereal Disease and the local public health authorities have taken the opportunity to conduct a vigorous campaign of instruction throughout the Dominion. A large meeting was held at Toronto on Nov. 8th under the chairmanship of the Hon. Mr. Justice Riddell, when a resolution was passed urging the Ontario Council to reorganise on the lines of the National Council in Great Britain. Branches of the Ontario Council are to be formed at Hamilton, Brantford, and London, and the Canadian Manufacturers' Association and Trades and Labour Council are to assist the campaign. Prior to the departure of the Commission for Hong-Kong and other Eastern ports it was able to convene a meeting at Victoria of representative organisations in British Columbia, and a committee was formed to assist the Canadian Council in attacking venereal diseases as a general health problem.

SOCIETY OF M.O.H.: SCHOOL MEDICAL GROUP.—A meeting of this Group will be held at 1, Upper Montague-street, Russell-square, London, W.C., to-day (Saturday), Dec. 18th, at 11 A.M. Members of the School Medical Service, who are not members of the Society, are invited as visitors. Further information may be had from the honorary secretary of the Group, Dr. A. Ashkenny, Soho Hall, Handsworth, Birmingham.

MAUDSLEY HOSPITAL.—Lectures and practical courses of instruction, being Part 2 of the second course for a Diploma of Psychological Medicine, will be held at the Maudsley Hospital, Denmark Hill, London, S.E., beginning on Monday, Jan. 3rd. Six lectures on the Pathology of Mental Diseases, including Brain Syphilis, its Symptomatology and Treatment, will be given by Sir Frederick Mott, F.R.S., on Mondays at 2.30 P.M., while at 5 P.M. eight lectures on the Psychoneuroses will be given by Dr. Bernard Hart. On Wednesdays, at 2.30 P.M., Dr. F. C. Shrubsall will give eight lectures on the Practical Aspect of Mental Deficiency, beginning on Jan. 5th; and on the same day, at 4.30 P.M., Dr. W. C. Sullivan will give the first of six lectures on Crime and Insanity. On Thursdays, at 2.30 P.M., 12 clinical demonstrations in neurology will be given by Sir Frederick Mott, F.R.S., and Dr. F. Golla. The first six demonstrations will be given by Dr. Golla at the Hospital for Paralysis and Epilepsy, Maida Vale, starting on Jan. 6th. An announcement will be made later regarding the six clinical demonstrations by Sir Frederick Mott. Beginning on Jan. 14th, a course of ten lectures or demonstrations on Differential Diagnosis and Treatment of Mental Disorders and Legal Relationships of Insanity will be given on Fridays, at 2.30 P.M., by Dr. C. Hubert Bond; and Dr. E. Mapother will give eight lectures on the Symptoms of Mental Disease, on Fridays, at 4.30 P.M., beginning on Jan. 7th.

ROYAL MEDICAL BENEVOLENT FUND GUILD.—As a result of the matinée held in aid of this guild at His Majesty's Theatre on Nov. 19th the funds of the guild have benefited to the extent of more than £1000.

UNIVERSITY COLLEGE HOSPITAL.—In his annual Christmas appeal for donations to this hospital from business firms the secretary announces a deficit of £12,000 for the year 1919, and a prospective deficit of £25,000 for 1920.

ROYAL INSTITUTE OF PUBLIC HEALTH.—Fellows and members wishing to be present at the next Geneva Congress, which will be held from May 10th to 16th, 1921, are requested to forward their names without delay to the secretary in order that the necessary arrangements may be made, at the same time intimating whether they will be accompanied by a lady.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION.—A general meeting of this association will be held to-day, Friday, Dec. 17th, at 4.30 P.M., at 2, Savoy Hill, Victoria Embankment, London, W.C., to elect officers for the year 1921. Mr. R. C. Elmslie has been nominated for the office of President.

PRESENTATION TO A MEDICAL MAN.—Dr. Williams Cock, the chairman of the Salcombe (Devon) urban council, was recently presented by the Salcombe Town Association and other subscribers with two framed pictures and a pair of prismatic binoculars as a mark of appreciation of his services to the town and of his valuable work during the late war.

TUBERCULOSIS SOCIETY.—The annual meeting of this society was held on Dec. 10th at the Cabin Restaurant, Tothill-street, Westminster, Dr. Nathan Raw, M.P., the President, in the chair. The honorary treasurer's report showed that the financial position of the society was very satisfactory, and after a resolution that the executive committee should be increased to 24 elected members was passed and other matters decided the members present sat down to dinner in the restaurant. Dr. Halliday Sutherland sped the parting President, Dr. H. de Carle Woodcock, and extended a hearty welcome to his successor, Dr. Nathan Raw, each of whom acknowledged the compliment. The dinner was a quite informal function and there were no other speeches. Dr. F. G. Caley, secretary of the Tuberculosis Group of the Society of Medical Officers of Health, and Dr. James Watt, secretary of the Society of Superintendents of Tuberculosis Institutions, were amongst those present.

BEIT MEMORIAL FELLOWSHIPS.—Seven elections to Beit Memorial Fellowships for Medical Research (35, Clarges-street, London, S.W.) have recently been made. The names of the newly elected Fellows, with an indication of the general character of the proposed research and the place where it will be undertaken, are as follows:—

Thomas Izod Bennett, M.D., B.S.Lond.—The secretory phenomena of the human stomach in health and disease as demonstrated by the fractional method of gastric analysis. (Laboratories of the Department of Physiology and the Bland-Sutton Institute, Middlesex Hospital.)

Mary Logan Cowan, M.B. Toronto.—Study of streptococci, including immunity. (Lister Institute.)

Katharine Hope Coward, M.Sc. Manch.—Investigation into the processes of metabolism, nutrition, and growth of young animals, with particular reference to the so-called deficiency diseases such as rickets. (Biochemical Laboratories of the Institute of Physiology, University College, London.)

Francis William Fox, M.Sc. Lond.—The sterol metabolism in diseases involving malnutrition; the origin and destiny of bodies of the cholesterol type; cholesterol oils. (Chemical Laboratory, St. George's Hospital, and Physiological Laboratory, South Kensington (University of London.))

Daniel Thomas Harris, M.B., B.S. Lond., B.Sc. Cardiff.—"Tonus," with special reference to the vascular system. (Institute of Physiology, University College, London.)

Wilder Graves Penfield, M.A. Oxon., M.D. Johns Hopkins, Litt.B. Princeton.—Microscopical study of the nervous paths which undergo degeneration after the removals, in whole or in part, of the forebrain or midbrain of experimental animals, with special reference to the origin of those paths responsible for decerebrate rigidity. (Pathological Laboratory of the National Hospital for the Paralysed and Epileptic.)

Howard William Copland Vines, M.A., M.B., B.Ch. Cantab.—The blood in reference to: (1) The rôle of calcium salts (*a*) in immunity and its phenomena, (*b*) by therapeutic injection in certain conditions (in conjunction with W. R. Grove, M.D., of St. Ives, Hunts); (2) changes in electrical resistance (if any) of blood or serum (*a*) during blood coagulation, (*b*) in the process of immunisation, (*c*) combination of toxin and antitoxin; (3) certain properties of anaphylactic blood and tissue extracts. (Medical Schools, Cambridge.)

The trustees have decided that the increase in the value of the Fellowships from £300 to £400, which comes into operation on Jan. 1st, 1921, shall apply not only to newly elected Fellows but also to the present holders of Fellowships. The Fellowship of Dr. E. P. Poulton was extended to a fourth year.

UNIVERSITY OF LONDON.—At a meeting of the Senate on Dec. 15th Miss Harriette Chick, D.Sc., was awarded the William Julius Mickle Fellowship of £200 in recognition of her important work during the past five years on diseases due to defective nutrition.

EXTENDED TREATMENT FOR TUBERCULOUS OFFICERS AND NURSES.—The Ministry of Pensions announces that officers and nurses who have completed a course of sanatorium treatment and who are certified as likely to benefit by a further course of treatment combined with training, will, if they decide to undergo such course, be granted retired pay at the rate appropriate to 100 per cent. disablement during such curative training and for a period of six months after its termination. The retired pay will be continued at a rate not less than that for 50 per cent. disablement for two years thereafter. These special extensions will be subject to the condition that the officers present themselves for examination by the local tuberculosis officer from time to time as directed, and comply with any instructions considered necessary for their treatment. Inquiries should be addressed to the Director-General of Medical Services (M.S. 3), Cromwell House, Millbank, London, S.W.1.

TAVISTOCK CLINIC FOR FUNCTIONAL NERVE CASES. A course of five lectures on Mental Deficiency will be given by Dr. W. A. Potts at 51, Tavistock-square, London, W.C., at 5.15 P.M., on Mondays, beginning Jan. 17th, 1921. The syllabus will include consideration of the nature of mental deficiency, its causation and pathology; the classification of the various forms, grades, and clinical types; certain institutions, workhouses, reformatories, prisons, rescue homes, &c.; diagnosis; mental tests; certification under the Mental Deficiency and of Defective and Epileptic Children under the Elementary Education Acts, and other means of treatment.

This course will be followed on Feb. 21st by the first of five lectures on Analytical Psychology, by Dr. Maurice Nicoll, at the same time and place. The subject matter of this course will be (1) the nature of the present conflict over the significance of the unconscious and its bearing on the future of analytical treatment. (2) symbolism of the infantile orientation. (The First Psychological Orientation.) (3) Symbolisms of rebirth in dreams. The intermediary stages between the First and Second Psychological Orientations. (4) Symbolism of the "soul" orientation. (The beginning of the Second Psychological Orientation, and the movement away from the mother.) Definitions of that psychological function which appears in the unconscious and can be termed soul or *anima*. (5) Suggestions on the prospective or synthetic significance of Freud's *Irma* dream, as distinguished from its reductive interpretation. The importance of the manifest content.

The fee for each of these two courses will be £2 2s. for medical practitioners and £1 1s. for medical students. Owing to limited accommodation it is particularly requested that tickets for the courses be taken in advance from Miss A. O. Trotter, 18, Eaton-place, London, S.W.1.

EDUCATIONAL ASSOCIATIONS: NINTH ANNUAL CONFERENCE.—This conference will be held in University College, Gower-street, London, W.C., from Dec. 29th, 1920, to Jan. 8th, 1921. The inaugural meeting will take place on Dec. 29th, at 3 P.M., at Bedford College for Women, York-gate, Regent's Park, London, the President, Lord Burnham, in the chair, when the Right Hon. H. A. L. Fisher, Minister of Education, will give an address on "Instinct and Education." The programme consists of numerous lectures and demonstrations of very wide and general importance. Among those lectures of special interest to medical men are: "Inheritance and Educability," by Dr. A. F. Tredgold (3 P.M., Dec. 30th); "Infant Mortality: Its Causes and Mitigation," by Dr. L. R. Veitch Clark (5 P.M., Dec. 30th); a joint conference, under the chairmanship of Professor C. E. Spearman, on "The Use of Psycho-Analysis in Education," at which Dr. H. Crichton Miller, Dr. Constance Long, Mr. George H. Green, B.Sc., and Dr. William Brown will speak (10.30 A.M., Jan. 1st, 1921); a discussion on "The Teaching of Health in Schools," to be opened by Dr. Elizabeth Sloan Chesser (3 P.M., Jan. 3rd); lectures on "The Vitamines," by Dr. J. C. Drummond (2.30 P.M., Jan. 4th); "The Principles of Child-tending 1 to 5 years of age," by Dr. Muriel Radford (5 P.M., Jan. 5th); "The Need of a Clean and Wholesome Milk-supply—How to Obtain it," by Mr. Wilfred Buckley (2.30 P.M., Jan. 6th); and on "The Nervous Development of the Child," by Dr. H. Crichton Miller (5 P.M., Jan. 7th). Non-members can purchase tickets admitting to all open meetings, 7s. 6d., or single meetings, 1s., at the secretary's table at the conference, or can obtain them beforehand from the Conference Office, 9, Brunswick-square, W.C.1, if a stamped and addressed envelope and a postal order for the amount due are enclosed with the order.

INSANITARY HOUSING IN LANCASHIRE.—A somewhat startling array of figures showing the insanitary state of much of the housing in Lancashire was presented by Mr. A. Legge, of the Housing Commissioner's Sanitary Department, at a conference of delegates of local authorities of Lancashire and Cheshire held in Manchester last week. In 1911 the number of dwellings in Lancashire was 1,038,807, and in 1919 1,067,407. Of the latter the number of overcrowded houses—i.e., with more than two persons in one room (two children being counted as one adult)—was 41,000. The number of unhealthy areas scheduled was 514, covering 554 acres, and comprising 20,772 dwellings. The number of houses per acre in these areas was 37·9, and the occupation rate was 4·97 persons per house—the new standard being 12 houses per acre. The number of houses returned as totally unfit for habitation was 10,596 occupied by 42,727 persons, the occupation rate being 4·03 persons per house. There were 103,423 people living in unhealthy areas, and over 26,000 seriously defective houses; 23,904 were of the back-to-back or other types of non-through house, and approximately 50,000 houses contained two families without having been specially adapted therefor. To sum up, one person in every eight in Lancashire (according to these statistics) is living under conditions that are unfavourable to health, convenience, comfort, and a standard of high morality.

MEDICO-LEGAL SOCIETY: ANNUAL DINNER.—The annual dinner of this society was held on Dec. 10th at the Holborn Restaurant, Lord Justice Atkin, the President, in the chair. Earl Russell proposed the toast of "Medicine and the Law," to which Mr. H. M. Cotton (the President of the Law Society) and Sir W. Hale-White replied. Sir Henry Duke (President of the Probate, Divorce, and Admiralty Division) gave the toast of "The Medico-Legal Society." He said that there had been recent controversy as to whether His Majesty's judges or the medical profession should decide as to the governing principle in criminology. He ventured to say that the matter was not to be decided in either place. If there was to be a new rule in such a matter it was to be decided in a higher forum than either—decided in the minds of the people and in the Legislature. He said that there was a great area in the administration of justice in which the assistance of trained medical men was invaluable, and he felt also that in certain aspects of life doctors would do well to have legal assistance. This coöperation was the object for which the Medico-Legal Society existed and which it steadily pursued. The President, in responding, said that the society in combining members of two learned professions was, as far as he knew, unique. It was in a flourishing condition, with about 200 members, but there was still room for more. The society was chiefly concerned about the problems that touched the administration of justice. There could be no more important factors in the well-being of the State, he supposed, than justice and health. In the Medico-Legal Society they did their modest utmost to serve both, and it was with that ideal that the society continued its operations. Dr. Henslowe Wellington proposed the health of "The Guests," and Mr. T. R. Hughes (chairman of the Bar Council) returned thanks. In response to a toast proposed by Mr. A. H. Trevor, speeches were made by Mr. Walter Schröder (honorary treasurer), Mr. Ernest Goddard (honorary secretary), and Dr. B. H. Spilsbury (joint honorary secretary). Dr. Spilsbury observed that he could not help feeling, especially when investigating criminal cases, how utterly behindhand the country was in regard to the knowledge of forensic medicine. Generally speaking the study of forensic medicine in this country had declined. The progress of forensic medicine, more than any other, was dependent upon the advance of science—physics, medicine, chemistry, to mention a few branches. Whilst other sections of medicine had been making progress, forensic medicine had lagged behind, and he thought it was quite time it woke up. In the first place, accurate records were needed of observations in forensic medicine, so that gradually a body of records should be acquired which would enable sound conclusions to be arrived at with regard to problems as they arose. We were continually being faced with difficulties because of the inadequacy of our knowledge, even of fundamental principles. There was, perhaps, only one branch of forensic medicine which had progressed—namely, the application of chemistry in regard to pathological medicine and toxicological knowledge. Dr. Spilsbury appealed to medical men to assist the society by supplying materials for discussion at the meetings, and by bringing forward cases which were not included in the records as being of too ordinary a character. It was only by the coöperation of men who were already studying forensic medicine, and of men who had investigated science in the different branches, that progress could be made in such a society as theirs. There was a vast field in this country, and especially in London, for investigation.

THE Belfast Hospitals Gala Committee has presented a cheque for £4000 to the Royal Victoria Hospital and a similar sum to the Mater Misericordiæ Hospital, as the result of a very successful movement amongst the various clubs devoted to sport in the Belfast area. These munificent gifts are highly creditable to those engaged in this effort, and it is hoped that this appeal may become an annual one. It is gratifying to find that hospitals which are feeling the pinch of present-day economic conditions are able to tap new sources of revenue.

MANCHESTER APPEAL FOR RADIUM.—To the appeal for £30,000 made in November somewhat less than £8000 has so far been received. It is hoped that more of the larger business firms will subscribe.

PATHOLOGICAL SOCIETY OF MANCHESTER.—At a laboratory meeting of this society, held in the Department of Pathology, University of Manchester, on Dec. 8th, Mr. J. P. Buckley demonstrated specimens of (*a*) chronic intussusception of the ileo-cæcal region; (*b*) a peculiar gall-stone formed in the cystic duct; and (*c*) an epithelial odontome. Dr. J. H. Dible demonstrated the histology of brain changes in two cases of encephalitis lethargica. Mr. H. Platt discussed endosteal tumours, and presented specimens of myeloma, endosteal sarcoma, and osteitis fibrosa. Mr. C. Roberts demonstrated specimens of (*a*) renal sarcoma and (*b*) traumatic rupture of the spleen. Dr. A. Sellers, the President, described the histological appearances in Mr. Roberts's case of renal sarcoma, and demonstrated specimens from a case of purulent meningitis due to the meningococcus.

SCHOLARSHIPS FOR MANCHESTER MEDICAL STUDENTS.—The late Mrs. Caroline Dickenson, of Bournemouth, under her will in 1913 left a certain sum for the establishment of scholarships for the benefit of students at Manchester University and the Royal Infirmary. After delays due to several causes the trust will now become operative. There will be five trustees, one nominated in the will, two others nominated by the University, and two by the Royal Infirmary. The scheme comprises four scholarships, one each in anatomy, pathology, surgery, and medicine, the last a travelling scholarship. The holder of any of these scholarships (except that in anatomy) is required to carry out research. The full trust funds are not immediately available. Meantime a research travelling scholarship will be provided. The selected scholar will be required to prosecute research at Paris or at another approved medical school outside the United Kingdom.

UNIVERSITY OF SHEFFIELD.—In connexion with the changes in the curriculum, which will come into force next year, the council of the University have appointed Dr. C. G. Imrie, of Toronto University, as lecturer on applied physiology in the University with charge of the physiological laboratories at the Royal Infirmary and Royal Hospital. The work will be carried out at these institutions under the direction of Professor J. B. Leathes, who has been elected on the staffs of both institutions as honorary physiologist. The structural alterations which are now in active progress will provide laboratory accommodation at each institution for all students doing clinical hospital practice, together with research laboratories for the staff. In future medical students will begin their clinical work at the end of the second year and during the succeeding year and a half will combine courses of applied anatomy and applied physiology with those of elementary clinical studies.

BRISTOL MEDICAL SCHOOL: ANNUAL DINNER.—On Dec. 9th the annual dinner of the Bristol Medical School was held in the Colston Hall, Bristol. About 200 students, past and present, met under the presidency of Dr. George Parker. The guest of the evening was Sir Robert Jones, whose health was proposed by Mr. C. Ferrier Walters. Sir Robert Jones, in proposing the toast of "The Medical School and other University Departments," gave an amusing account of the difficulties which attended the search for a name for that branch of surgery which has come to be described as "military orthopædics." In this connexion he paid a tribute to the work of Mr. E. W. Hey Groves. He also referred to the part played by the Vice-chancellor, Sir Isambard Owen, and the members of the Wills family, in the recent expansions of the University; to the scientific work of former members of the Bristol School such as Budd, Symonds, and Prichard, and to the international reputation of the researches of its present Dean, Professor Edward Fawcett. Professor Fawcett replied on behalf of the Medical School, and Professor A. M. Tyndall for the other departments, the latter saying that he looked for closer cooperation between medicine on the one hand and chemistry and his own department of physics on the other. Mr. F. Richardson Cross next proposed the health of "The Past and Present Students," to which Dr. D. T. Price and Miss Golding and Mr. G. B. Bush replied. To the health of "The President," proposed by Dr. Carey Coombs, Dr. Parker responded briefly.

SOUTH AFRICAN MEDICAL CONGRESS.—The question of the formation of a South African Medical Association, which would mean the breaking away from the British Medical Association, was one of the principal matters discussed by this congress at Durban. The proposal came from the Transvaal, and was not very favourably regarded by the representatives of the other Provinces of the Union. The result of the discussion was the postponement of further consideration of the project for another year. The suggestion advanced by the advocates of the change was that a South African Association, with its own constitution, would be likely to attract a larger medical membership in the Union than the Association as at present constituted.

WATER-SUPPLY OF BIDEFORD (DEVON).—The water-supply of Bideford has for about fifty years been under discussion by the local town council. On Dec. 2nd, however, a scheme known as the Jennett's Stream Scheme was approved, at an estimated cost of £37,500. This will give the town a storage supply of 29,000,000 gallons. It was stated that the scheme was prepared in 1913, when the cost of the undertaking would have been between £13,000 and £15,000.

THE LATE DR. H. E. JOHNSON.—Hubert Edwyn Johnson died at sea, near Marseilles, on Nov. 11th. After graduating M.B., Ch.B. Edin. in 1908, Dr. Johnson practised at Callington, Cornwall, where he held several appointments, being district medical officer and public vaccinator of the Liskeard union, police surgeon, &c. Recently he broke down in health and went to Australia, but was advised to return home and died on the return voyage. His widow is at Marseilles, herself very ill, and much sympathy is felt for her in Callington and the district, where Dr. Johnson was highly esteemed.

TORQUAY MEDICAL BATHS.—At the last meeting of the Torquay Town Council, it was stated that the total loss on the medical baths, since their opening in 1916, amounted to £7500. It was alleged that the black smoke from the chimney of the electricity generating station, and the resulting dust, was the cause of the unsatisfactory state of the baths. The Electricity Committee had been called upon to abate the nuisance. Eventually the council decided to confer with the borough accountant upon the financial aspect of the undertaking, and also to consider whether the baths should remain open or whether they should be let or closed.

BATH PENSIONS HOSPITAL.—A meeting was recently held at the Bath Pensions Hospital, at which the medical superintendent (Lieutenant-Colonel A. Milne-Thompson), who presided, appealed for funds and helpers to assist the bed patients to do productive work. It was pointed out that during the war there was no lack of interest shown by the public in providing work of the kind, but now that the war is over the men are in danger of being forgotten. Employment is all the more necessary for these patients because they are in hospital for long periods, separated by distance from their friends, and unable to find mental occupation easily. The ladies of Bath have undertaken to revive interest in the men, and it is expected that the necessary funds and helpers will be forthcoming.

THE LATE DR. A. W. MATHER.—Dr. Alexander William Mather, who was in partnership with his brother-in-law, Dr. T. H. Kirk, at Norton-on-Tees, met with his death under tragic circumstances on Dec. 5th. While Dr. Mather was entering the garage with a lighted candle in his hand an explosion occurred, presumably on account of the presence of benzol vapour. He was severely burned and died from shock. Dr. Mather was educated at Edinburgh University, where he graduated M.B., Ch.B. in 1912 and proceeded to the M.D. four years later. Before going to Norton-on-Tees he successively held appointments at the Royal Infirmary, Edinburgh, St. Mary's Hospital, Manchester, and at the Infirmary, Middlesbrough.

HEALTH OF DORSET.—Dr. J. E. Robinson, the county medical officer of health for Dorset, presented his annual report for 1919 at the last meeting of the Dorset County Council. Dr. Robinson estimates the population of the county at 208,423 (111,339 urban, 97,184 rural). 3494 births were registered against 3529 in the previous year. The deaths numbered 2854, compared with 3807 in 1918. 235 deaths were due to influenza, compared with 433 in the previous 12 months. There were fewer deaths from phthisis and pneumonia, but an increase in deaths from bronchitis. Dr. Robinson reports that 275 cases of tuberculosis were notified in Dorset during 1919, compared with 358 in 1918. The number of deaths was 251, being nine less than the previous year. 41 cases of non-pulmonary tuberculosis were notified. Dr. Robinson adds that, judging by the cases sent from the Poole district, there appears to be urgent need for the establishment of open-air schools, and the provision of meals for the school children in that borough.

THE LATE SIR FREDERICK TAYLOR.

THE following communication from one who worked for a long time at Guy's Hospital under Sir Frederick Taylor will be read with interest and pleasure:—

I should like to be permitted to supplement your able résumé of the late Sir Frederick Taylor's career from the point of view of one who was his clinical clerk, and subsequently house physician, at about the mid-period of his long tenure of office as physician to Guy's Hospital. To his junior clerk he was a critical and somewhat austere master, to his senior clerk an erudite but rather mystifying teacher, to his house physician a source of life-long inspiration in the intricate pro's and con's of clinical medicine. As evidence of the remarkable esteem in which he was held by his house physicians I may mention the imposing concourse which assembled at Guy's to accompany him in his last round of the wards.

The source of his intellectual influence lay in two closely interwoven characteristics, his infinite care in the mastery of detail, and his devotion to truth. His mind was always collecting, balancing, and weighing evidence, and his clinical conclusions were consequently extraordinarily illuminating for those who understood his methods; his opinion was so nicely poised that the slight touch which he gave to the scale, one way or the other, might require considerable experience for its appreciation. All this does and does not come out in his "Practice of Medicine." To the student this work appears concise and dogmatic, but to those who know his meticulous care in expression each statement is a summing-up of an extensive experience and an elaborate process of reasoning. I cannot, of course, speak of the value set upon his professional opinion by his colleagues, but I may say that I have often been struck by the way in which they all seemed to rely on him in times of personal sickness.

To those who knew him well I believe that Sir Frederick Taylor's intellectual capability was equalled, if not overshadowed, by his other qualities. His exactitude was moral as well as mental, his kindliness severely simple and eminently practical; he had a well-developed sense of humour and a great faculty of unbending with his juniors, to many of whom he was not only a professional and personal example, but a beloved and valued friend.

Clifton, Dec. 14th. J. M. F.-B.

BOOKS, ETC., RECEIVED.

CHAPMAN AND HALL, London. WILEY, J., New York.
The Yeasts. By A. Guilliermond, D.Sc. Translated and Revised by F. W. Tanner, M.S. Pp. 424. 33s.

CHRISTOPHERS, London.
A Consulting Surgeon in the Near East. By A. H. Tubby, C.B., C.M.G., M.S.Lond. Pp. 279. 15s.

CHURCHILL, J. AND A., London.
Physical Signs in the Chest and Abdomen. By A. J. Jex-Blake, M.D. Pp. 119. 9s. 6d.
The Principles of Preventive Medicine. By R. Tanner Hewlett, M.D., and A. T. Nankivell, M.D. Pp. 536. 21s.

CONSTABLE AND CO., London.
The Auld Doctor and Other Poems and Songs in Scots. By D. Rorie, M.D. Pp. 62. 3s. 6d.
Public Health Chemical Analysis. By R. C. Frederick, Royal Naval Medical School, Greenwich; and A. Forster, Ph.D. Pp. 305. 21s.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
Lectures on Tropical Ophthalmology. By R. H. Elliot, M.D., B.S. Lond. Pp. 36. 3s. 6d.

HODDER AND STOUGHTON, London.
The New Education. By L. Haden Guest, M.R.C.S., and Others. Pp. 118. 2s.

JOHNS HOPKINS PRESS, Baltimore.
The Johns Hopkins Hospital Reports. Vol. XIX. 1920. Pp. 356.

KIMPTON, HENRY, London.
Obesity: Its Treatment. By T. Dutton, M.D. 2nd ed. Pp. 48. 2s. 6d.
Infant Education. By Eric Pritchard, M.D. With a Preface by A. Winter Blyth, M.R.C.S. 2nd ed. Pp. 226. 6s.
Physiology and Biochemistry in Modern Medicine. By J. J. R. Macleod, M.B., and others. 3rd ed. Pp. 992. 42s.

LONGMANS, GREEN, AND CO., London.
Nucleic Acids: Their Chemical Properties and Physiological Conduct. By Walter Jones, Ph.D. Pp. 150. 9s.

MACLEHOSE, JACKSON, AND CO., Glasgow.
Notes on Midwifery. Illustrated. By J. M. M. Kerr, M.D., and J. Hendry, M.B. 2nd ed. Pp. 156. 10s. 6d.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, DEC. 14TH.

REJECTION OF THE MINISTRY OF HEALTH BILL.

Viscount SANDHURST moved the second reading of the Ministry of Health (Miscellaneous Provisions) Bill. After describing in detail the proposals contained in various clauses of the Bill, the noble lord said that Clause 8, which deals with the treatment of incipient mental disorder, was an endeavour to deal more efficiently, more humanely, more judiciously, and more justly with this kind of case. Dealing with Clause 9, the hospital clause, the noble lord admitted that it was a controversial clause, but said it had been much changed since the Bill was first introduced. In regard to Clause 10 (regulation of sale of clinical thermometers) its provisions, he said, were supported by the Association representing the manufacturers of this country in that particular business. The number of defective clinical thermometers was 40 per cent. some years ago; now it was only 2 per cent. The pre-war charge for testing thermometers was 1s. each; now it was only 3d. each. He believed that the thermometers produced by the best British firms were now only defective to the extent of 0·5 per cent. He denied that the Bill would add fresh burdens either to the taxpayer or the local ratepayer.

Lord STRACHIE, in moving the rejection of the Bill, claimed that Clause 9 was opposed by large bodies like the Poor-law Union. It was impossible for the County Councils to give that individual attention to hospitals and infirmaries which was given by the guardians on the spot. These proposals were bound to increase the local rates. If the guardians were to have their hospitals taken over and they were still to remain under their statutory obligation to look after the sick poor, they would have to build other hospitals or infirmaries. The County Councils had definitely made the statement that if they had to take over these hospitals they would expect to get a grant from the Exchequer. As to the Clause dealing with clinical thermometers, the noble lord described it as grandmotherly interference.

Lord HARRIS asked if the infirmaries were to be taken over from the Poor-law authorities, what about the patients which those authorities were now treating? He would be very surprised if the medical officer of the county did not ask for extra staff as soon as more patients were put under his charge.

Lord GAINFORD said the Marquis of CREWE, who had been obliged to leave the House, had asked him to say that, although many of their lordships who formed the opposition were not unfriendly to the Bill, and were not anxious to consider it in a hostile or critical spirit, but rather to help the Government to improve it as far as they could, they did feel that it was unfair to ask the House to pass the Bill through all its stages before Christmas.

The Marquis of SALISBURY regretted that the Bill had been introduced in such a form. Some of its provisions were good, and he would be very sorry if an adverse fate befell them; but others he might describe as very objectionable. The Bill could not go through in its present form. He would like the Government to drop the controversial part of the Bill, and only pass those clauses on which there was a general agreement. There was a great deal to be said for Clause 8, but it raised very important questions which required to be treated with great care. Unless the safeguards were very carefully scrutinised great injustice might be done. The proposal to take over the Poor-law hospitals and make them into general hospitals supported by the rates made an enormous difference to the whole question of the future of our hospitals. They ought not to take such a step at the very moment when a Committee was sitting to decide the future of the voluntary hospitals.

Earl CURZON, the Leader of the House, agreed that if their lordships would take the second reading of the Bill that night he would postpone the Committee Stage until after the Christmas adjournment.

The Earl of SELBORNE said he doubted if such a remarkable Bill had been introduced into Parliament during the past 30 years. It was a controversial and inartistic measure.

On a division the second reading of the Bill was rejected by 57 votes to 41, and Lord STRACHIE'S motion for rejection was then agreed to without a division.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 8TH.

DISCUSSION ON MINISTRY OF HEALTH BILL.

THE House considered the Ministry of Health (Miscellaneous Provisions) Bill as amended in Standing Committee.

Application to Ireland.

Mr. D. M. WILSON (Solicitor-General for Ireland) moved a new Clause to provide that the Bill should apply with certain modifications to Ireland. The Clause, among other things provides, with respect to the treatment of incipient mental disorder that the Lord Lieutenant, or any officer or officers appointed by him for those purposes, shall be substituted for the Minister, and references to the Lord Chancellor and to the Judge or Masters in Lunacy shall be construed as references to the Lord Chancellor of Ireland, and to any judge authorised to exercise jurisdiction with respect to lunatics or the Registrar in Lunacy; that the references to the Public Health Act, 1875, in Part I. of the Second Schedule of the Act, shall be construed as references to the corresponding sections of the Public Health (Ireland) Acts, 1878 to 1919; that references to the Lunacy Acts, 1890 to 1911, shall be construed as a reference to the Lunacy (Ireland) Acts, 1821 to 1901; that the council of a county shall have power to resolve that an annual sum of such amount as they may determine with the approval of the Local Government Board for Ireland shall be raised off their county to be paid as a salary to the surgeon of the county infirmary; and the limit imposed upon the amount of any such salary by Section 86 of the Grand Jury (Ireland) Act, 1836, as adapted by the Local Government (Adaptation of Irish Enactments) Order, 1899, shall be repealed. He said the main provisions of the new Clause provided machinery to enable the benefits given under the Bill to be applied to Ireland. Under an Act of 1836 the surgeons of the county infirmaries in Ireland were paid a salary of £75 a year, and the object was to enable the county council to increase that sum.—The Clause was read a second time and agreed to.

Incipient Mental Disorder.

On Clause 8, which deals with the treatment of incipient mental disorder, Mr. MYERS moved to leave out the Clause. He said the Clause was quite inadequate. It would not achieve its purpose, and even if it did it was not a fraction of what the victims of shell-shock were entitled to.—Mr. R. RICHARDSON, in seconding, said that poor soldiers would be driven into homes where they would be in terrible dread of being exploited by the people who were running those places. —Colonel LESLIE WILSON, on behalf of the Government, contended that these men, and all those who entered these institutions, were safeguarded as far as it was possible to safeguard them. It would only have been possible to go further by the expenditure either by the State or by the local authorities of a very large sum of money for the establishment and maintenance of special homes for this particular object, and he did not believe that such expendi- would have been acceded to by the House.—Mr. RAWLINSON, in supporting the amendment, said that the Clause was a distinctly dangerous one. The lunacy law in this country was designed to prevent anything like unlicensed houses for lunatics. This Clause allowed certain people who were not under the control of the Lunacy Act to receive lunatics. The Lunacy Commissioners had experience of this work, but these men who set up these institutions were not to be responsible to those Commissioners; they were to be responsible to the Ministry of Health, who had little or no experience of lunacy. If they had an Opposition this sort of thing would not be allowed to go on.—Mr. ORMSBY-GORE said it was quite clear that no shell-shocked soldier would come under the operation of this Clause, which was limited to persons suffering from mental disorder which was incipient in character and of recent origin. Practically all the shell-shock cases were being dealt with in special neurasthenic hospitals under the Ministry of Pensions, and would remain under that Ministry until they were cured. They were legislating here for the type of person who might or might not become a lunatic. There were many of these cases, especially among young persons. There were also cases of adolescent insanity and delirium tremens. The way to deal with shell-shock cases was to secure a limited number of seaside boarding-houses, with the most grand-motherly landladies they could get, properly certified by the Ministry of Health. Once they got them into the atmosphere of an institution and on the slope that led to lunacy all chance of curing such a case or of holding it back was gone.—Mr. T. THOMSON argued that the ex-Service man was not being dealt with adequately by the Ministry of Pensions, and this Clause was only attempting to touch the fringe of the question. It would be better to leave this alone entirely in order to get a more comprehensive and effective scheme next session.

Earl WINTERTON moved, and Major MOLSON seconded, the adjournment of the debate as a protest against the absence of the Minister of Pensions, but the motion was rejected by 104 votes to 18.

Lieutenant-Colonel FREMANTLE said that it was seen by everyone that the fringe of lunacy could not be dealt with by the lunacy laws and lunacy systems. It must be dealt with entirely separately. That was no new discovery. The whole of modern treatment was in that direction. He had a report by the Medico-Psychological Association dated 1918, and it dealt with the different points summed up in this Bill. The early symptoms of disorder often occurred long before certification was possible, and medical opinion was that they must deal with this point apart from the compulsory or penal clauses of the lunacy laws from the social point of view. They ought to be treated as mental disorders, and that was what the Bill did. The best treatment for these people was in private houses and in family life. Many of these cases, instead of being once and for all labelled as lunatics, were curable and would be cured, but they wanted the homes to be under guidance and control. The proposals of the Bill were grossly inadequate. They hardly touched the real poor, the real working classes as they used to understand them. A physician with whom he had been in correspondence had written to him to say that he agreed that this Clause was a very workable start, and he hoped it would go through all right.—Captain ELLIOT said this was not an untried experiment. It was a system which had been in operation for the last 54 years in Scotland. In Scotland the position had been very much more advanced than anything suggested in this Bill. The private case could be consigned to a private residence for not exceeding six months on one medical certificate under Section 13 of the Lunacy Law of 1866. It had worked so well in practice that many cases of people who could afford it had been sent from England to take advantage of this temporary residence, where they were not certified as lunatics and had a chance, if they recovered, of going back into normal life without the asylum stigma attaching to them.—Earl WINTERTON: Have these institutions in Scotland dealt with the class of patient which the Minister wishes to deal with under this Clause, the poorer class of the population who cannot afford it?—Captain ELLIOT said the people were undoubtedly better off than the poorer classes, but in the cases to which the Minister was referring, the soldier under the Ministry of Pensions, there would be funds available for their treatment.

Dr. NATHAN RAW said, as one who had been attending many thousands of certified lunatics in and out of asylums, he might inform the House of the real meaning of this Clause. He contended that this Clause had no reference whatever to the Lunacy Acts. Its whole object was to treat mental disorder exactly as they would treat any other disease that the human body was subject to. There was no form of compulsion whatever, and the object of the 48 hours' detention was that if a person undergoing treatment in one of these institutions or homes suddenly became suicidal or homicidal it would be obviously unsafe to allow him to walk out, and in these special cases 48 hours' notice should be given so that his friends might be communicated with and he might be taken away. The 48 hours' detention was simply to protect the man himself or the community from a possible murder. He impressed upon the House the great importance of giving everyone a chance who was attacked, as any of them might be at any time, with incipient mental disorder to get well. The only alternative, as the law at present stood, was that any person suffering from incipient mental disorder must go into a lunatic asylum. A rich person could fit up his house as a private lunatic asylum, with nurses and doctors, but the poor could not do that. They had no alternative but to be certified and put in an asylum. In the case of a person who was certified as a lunatic there was the very greatest difficulty in getting employment again in any capacity, and the object of this Clause was to try and first of all cure insanity in the earlier stages, so as to prevent it becoming incurable and to prevent the stigma of lunacy falling on persons who had unfortunately been attacked with incipient mental disorder. He impressed upon the House the great importance of passing this reform, which would be of enormous benefit to the community.

Dr. ADDISON said that though this question did not apply only to war cases, during the war this method was used particularly for the treatment of these mental disorders, and the evidence became overwhelming as to the necessity for encouraging this class of treatment. There was the greatest necessity for these men not being labelled lunatics. With regard to the 48 hours' notice, that was the maximum time detention might be made, except in the cases mentioned by Dr. Raw, and the regulations provided for in Paragraph 4 of the Clause, which had to be laid on the table of the House and be approved by the House, would set down the conditions clearly.—Major HAMILTON: Could not the right honourable gentleman insert some such words as these, "if fit to leave, or, if not so fit, if he delivers 48 hours' notice?—Dr. ADDISON said he would give that suggestion careful consideration.

On a division, the motion to leave out Clause 8 was negatived by 88 votes to 24.

Colonel L. WILSON moved an amendment enabling anyone in the institutions for the treatment of incipient mental disorder to come out at any time on giving notice in writing, except that where a person, in the opinion of the superintendent, or other person aforesaid, was not in a fit state to leave he might be detained for a period not exceeding

48 hours from the date of the notice.—The amendment was agreed to.

Major ENTWISTLE moved a new Subsection to provide that, except in cases of homicidal mania, no person should be certified as a lunatic under the Lunacy Acts, 1890 to 1911, while detained in any institution, home, or house under the Clause. He said it was important that there should be no suspicion that these homes were an easy way to get into a lunatic asylum. This safeguard was the most important that could be inserted in the Bill.—Mr. RAWLINSON seconded.—The amendment was rejected on a division by 81 votes to 23.

Provision of Hospitals.

On Clause 9, which deals with the power of county councils to provide hospitals and ambulances, Mr. ORMSBY-GORE moved to leave out the Clause. He said that the Minister wished to break up the Poor-law, but instead of doing it openly and honestly he had done it in piecemeal fashion. He had treated boards of guardians most unfairly. He believed that Dr. Addison had been completely misinformed as to what he was likely to get out of this Clause. Do not let them forget that in their zeal to scrap the Poor-law they had to see that provision was made for people who could not afford to pay at all. The Minister was obsessed with the idea of having a hit at the guardians and of tinkering with the hospital system of the country.—Mr. LORDEN seconded. At the present time the country could not stand all this expense.

Dr. ADDISON urged that every body of men who had investigated this matter had, without exception, come to the conclusion that the only effective way to procure the proper health development of the country was to associate the hospital system with the proper health authority. There were 635 Poor-law unions and they did not want to have 635 separate hospital authorities. The supplies of skilled personnel and highly trained staff available in the country for general hospital service was extremely small, and it would not go round all these 635 hospital authorities. The unit of area for these purposes must be a county. These proposals were along the line of the proper development of the health services of the country, and he asked the House to give its support to the Clause.—Dr. RAW sincerely hoped the House would give the Minister the powers he sought to meet the great emergency of to-day. The expense incurred in transferring these institutions would be infinitesimal.—Captain ELLIOT said the problem was only just beginning when they had taken over the hospitals by the county councils. A new set of problems would then arise. The problem of hospital administration would be very large and very complicated, and there would be a very complicated network of problems as to what share the medical profession was to take in the administration of the hospitals which had been taken over, because they would be controlled largely by a committee of the county council on which the medical men staffing the hospitals and doing the work would need to have pretty large representation.—On a division the motion to leave out the Clause was rejected by 70 votes to 28.

An amendment moved by Mr. MYERS to leave out Subsection 5, which gives power to recover the cost of maintenance in hospital of persons receiving treatment in hospitals maintained by the county councils, was negatived on a division by 76 votes to 18.

Clinical Thermometers.

On Clause 10, which deals with the regulation of sale of clinical thermometers, Mr. LORDEN moved to leave out the Clause.—Mr. HOPKINS seconded.—Mr. ORMSBY-GORE hoped that the Minister would retain the Clause, which was quite the most useful Clause in the whole Bill, and the only one really worth having. A medical man had told him that before the war 40 per cent. of the clinical thermometers manufactured in this country were unreliable and inaccurate. During the war the Government came to the conclusion that they should test thermometers, and they established a testing station at Kew which was really valuable.—The motion to delete the Clause was negatived.

On the motion of Dr. ADDISON an amendment was agreed to applying the Clause to Scotland.

The report stage of the Bill was concluded.

On the motion for the third reading of the Bill Mr. ORMSBY-GORE and Captain ELLIOT protested against the late hours at which these great measures were taken.

Colonel FREMANTLE said that the country had been told that the Ministry of Health was to be a real Ministry of Health and not merely the Local Government Board carried on under another name, and that it was to coördinate all the health services of the country, to work them altogether and to make them a far greater force than ever before. This Bill was a very poor vindication of that declaration. It was not the fault of the Minister in charge of the Bill, nor of the Government, with the mass of legislation before Parliament, but those who were specially concerned in the public health of the country were bound to point out that this was a very inadequate instalment of that undertaking. There were enormous commitments overdue in view of all the declarations made. Tuberculosis had been shelved time and again. The Milk and Dairies Bill was passed in 1915 after many years as the first instalment of the prevention of tuberculosis. Again that had been shelved this year. Then there was the question of Poor-law organisation. The organisation of the local authorities had again been shelved, and they had the whole scheme for the organisation of the medical services waiting for all these things. They had got the third reading of this Bill in an emasculated form.

The Bill was read a third time, and the House rose at 6.45 A.M., after having discussed the measure throughout the night.

Dental Legislation.

Replying to questions by Mr. RAFFAN and others as to when it was proposed to introduce legislation to carry out the recommendations of the Departmental Committee on the Dentists Act, 1878, Dr. ADDISON said: In accordance with the promise made by me with the concurrence of the Lord Privy Seal to a deputation representing a large body of Members the Bill dealing with this subject will be introduced so as to enable it to be printed before the recess in order that those interested may have an opportunity of examining the proposals. The Bill will be introduced in a few days.

Patent Medicines.

Sir PHILIP MAGNUS asked the Prime Minister whether, having regard to the importance of the subject in the interests of public health and the delay that had occurred in dealing with it, he would arrange for the introduction early next session of a Bill to give effect to the recommendations, or to some of the recommendations, of the Select Committee on Patent Medicines.—Dr. ADDISON replied: It is proposed to introduce next session a Bill giving effect to the proposals which have now been agreed with the parties concerned.

THURSDAY, DEC. 9TH.

Photographs of Unidentified Men.

Mr. HAILWOOD asked the Minister of Pensions if it was intended to take photographs of soldiers who were inmates of mental hospitals and whose identity was not known; and whether such photographs would be published in the form of a gazette to be obtained by the relatives of missing soldiers.—Mr. MACPHERSON replied: There are only four unidentified men who have been admitted to mental institutions since August 1st, 1914, and these are not ex-Service men.

Buttrills Convalescent Treatment Centre.

Major COPE asked the Minister of Pensions if he would state the cost of the conversion of the Buttrills Camp, Barry, Glamorgan, into a convalescent treatment and training centre for the wounded.—Sir ALFRED MOND (First Commissioner of Works) replied: The total estimated cost of conversion is £62,150, including equipment and furnishing and payments to the Disposals Board in respect of hutting, &c.

Sanitary Accommodation in Factories.

Lord HENRY CAVENDISH-BENTINCK asked the Secretary for the Home Department whether the report of His Majesty's Chief Inspector of Factories on the conditions of sanitary accommodation in factories and workshops revealed a deplorably low standard among local authorities in many parts of the country; and whether, and in how many instances, advantage had been taken of Sections 4 and 5 of the Factory and Workshop Act by the Home Office acting in default and recovering from the local authority.—Mr. SHORTT replied: The answer to the first part of the question is in the affirmative. As regards the latter part, many notices of defects have been sent to the local authorities, but in the event of their not taking steps to remedy them, all that the inspectors can do is to serve notices on the factory and workshop occupiers requiring them to provide suitable accommodation. The root of the mischief lies in the fact that in the districts concerned the system of drainage is insufficient—that is to say, the conditions in the factories and workshops are due to circumstances for which the local authorities are responsible, and can only be remedied by the local authorities adopting improved standards. On this side the matter falls within the jurisdiction of the Ministry of Health, who have it, I understand, at present under consideration and are about to confer with the Home Office with a view to joint action.

Typhus in Poland.

Mr. ANEURIN WILLIAMS asked the Under Secretary of State for Foreign Affairs if he would state what progress had been made by the League of Nations in collecting the sum of £2,000,000 to conduct the campaign against typhus in Poland and also the sum of £250,000 required for immediate use in that campaign; and what exactly was the relation between the larger and the smaller of those funds.—Mr. HARMSWORTH replied: I understand that the appeal made by the Council of the League of Nations has not met with

the success that was anticipated, and that the whole question is still under consideration by the Assembly at Geneva.

MONDAY, DEC. 13TH.

Remuneration of Insurance Practitioners.

Lieutenant-Colonel BURGOYNE asked the Minister of Health whether he was aware that in a number of instances the panel doctors in London, under the London Insurance Committee, were in many cases still unpaid for their services to the State; and what steps he proposed immediately to meet these arrears of payment.—Dr. ADDISON replied: The method of calculation of remuneration of insurance practitioners in force for 1920 enables a prompt settlement, to be made quarter by quarter, of the sum agreed to be paid, and I am informed that these payments have been made. There were certain balances outstanding in London for 1919, which under the old system of calculating remuneration could not be finally computed until recently, but they were paid last week, except in cases where particulars are still awaited from individual practitioners.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CUMMINS, S. L., A.M.S., has been appointed David Davies Professor of Tuberculosis in the Welsh National School of Medicine, and Chief Medical Officer of the Welsh National Association for Combating Consumption.

FRASER, F. R., M.B., Ch.B., F.R.C.S. Edin., to the University Chair of Medicine, tenable at St. Bartholomew's Hospital Medical School.

DE GLANVILLE, L. R. G., M.R.C.S., L.R.C.P., Honorary Medical Officer to the Newton Abbot (Devon) Hospital and Dispensary.

JOHNSTON, C. H. F., M.D., B.S. Lond., Medical Officer to the Frome Workhouse and Children's Homes.

LEE, S. W. T., M.B., B.Ch., B.A.O. Queen's Univ., Belfast, Medical Officer, Southern Rhodesia, under the British South Africa Company.

PEARSON, L. G., M.D. Durh., Clinical Assistant at St. John's Hospital for Diseases of the Skin, Leicester-square.

PEEBLES, D. J., M.B., Ch.B., D.P.H., Medical Superintendent of Salterley Grange Sanatorium, Cheltenham.

POCOCK, H. I., M.R.C.S., L.R.C.P. Lond., Honorary Medical Officer to the Newton Abbot (Devon) Hospital and Dispensary.

ROGERS, B. M. H., M.D., B.Ch. Oxf., Regional Medical Officer for Bristol, Bath, Gloucestershire, and Somerset.

RYLAND, A., F.R.C.S. Edin., Aurist and Laryngologist to the College of Nursing, Henrietta-street, Cavendish-square, W.

WALTERS, ENID M., M.B., B.S. Lond., Assistant Medical Officer at the Dorset County Mental Hospital, Dorchester.

Certifying Surgeons under the Factory and Worshop Acts: THOMAS, A., M.B., B.S. Lond. (Aberystwyth); KIRK, G. W. L., M.B., Ch.B. Leeds (Bellingham); ROSSIE, J. C., M.D. Edin. (Bathgate).

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal Mineral Water Hospital.—Res. M.O. £200.

Birmingham City Hospital for Infectious Diseases, Little Bromwich.—Temporary Female Asst. M.O. £350.

Birmingham General Hospital.—Res. Anæsth. Also H.P. £100.

Birmingham, Queen's Hospital.—H.P., H.S., and Cas. H.S. £90 each.

Blackburn County Borough.—Female Asst. M.O.H. £803 7*s.* 6*d.*

Bradford City Education Committee.—Female Asst. Sch. M.O. £600.

Burnley, Victoria Hospital.—H.S. £250.

Camberwell Infirmary, Brunswick-square, Camberwell, S.E.—Locum Tenens Asst. M.O. £7 7*s.* a week.

Cancer Hospital (Free), Fulham-road, London, S.W.—Director of Research Inst. and Director of Path. Dept. £1200 and £800 respectively.

Colonial Service.—M.O.'s for West African Medical Staff, Government Service in Malaya, East African Protectorates, West Indies (including British Guiana), Fiji, and the Western Pacific, &c.

Coventry and Warwickshire Hospital.—Res. H.P. £250.

Croydon County Borough.—Asst. M.O.H. £500.

Doncaster Royal Infirmary and Dispensary.—Asst. H.S. £225.

Gateshead County Borough Mental Hospital, Stannington Northumberland.—Asst. M.O. £400.

Great Northern Central Hospital, Holloway, N.—Anæsth. £10 10*s.*

Guildford, Royal Surrey County Hospital.—H.S. £150.

Highgate Hospital, Dartmouth Park Hill, N.—Two Asst. Med. Supts.

Home Office, S.W.—Med. Inspectors. £500, &c.

Hospital for Sick Children, Great Ormond-street, W.C.—Cas. M.O. £400.

Huddersfield County Borough.—Asst. M.O.H. £500.

Kingston-upon-Hull, City and County.—Asst. Tuberc. O. £550.

Leicester, North Evington Poor-law Infirmary.—Res. M.O. £300.

Lincoln County Hospital.—Jun. H.S. £150.

London County Mental Hospital Service.—Sixth and Seventh Asst. M.O.'s. £300.

London (Royal Free) School of Medicine for Women.—Prof. of Obstet. and Gynæc. and Direc. of the Obstet. and Gynæc. Unit. £2000.

Manchester Medical Mission.—Doctor. £54 12*s.*

Manchester, Prestwich County Asylum.—Asst. M.O. £572 18*s.* Also Locum Tenens. £8 8*s.* per week.

Manchester Royal Infirmary.—Asst. Res. Surg. O. £200. Hon. Asst. S. H.S. to Special Departments. £50.

Margate, Royal Sea Bathing Hospital for Surgical Tuberculosis.—Female S. £200.

Metropolitan Hospital, Kingsland-road, E.—Cas. O. and Res. Anæsth. £120. Also Asst. S.

Napsbury Mental Hospital, Napsbury, near St. Albans.—Third Asst. M.O. £425.

Newark Hospital and Dispensary.—Res. H.S. £200.

Newcastle-upon-Tyne, City Hospital for Infectious Diseases, Walker Gate.—Res. Med. Asst. £350.

Newcastle-upon-Tyne Hospital for Sick Children.—Jun. Res. M.O. £200.

Nottingham City Asylum.—Second Asst. M.O. £400.

Oxfordshire Education Committee.—Sch. Dent. £450.

Pembroke and Pembrokeshire County Education Authority.—M.O.H. and Sch. M.O. £600.

Perth County and City Royal Infirmary.—Sen. and Jun. H.S.'s, £6 6*s.* and £5 5*s.* respectively.

Perth, Murray Royal Mental Hospital.—Asst. P. £300.

Portsmouth Royal Hospital.—Two H.S.'s. £150.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Hon. Radiologist. £100.

Queen Mary's Hospital for the East End, Stratford, E.—Hon. Ophthal. S. Also M.O. to Massage Dept.

St. Bartholomew's Hospital.—Asst. P. and Asst. Director of Medical Professorial Clinic.

St. Mark's Hospital for Cancer, Fistula, and Other Diseases of the Rectum, City-road, E.C.—H.S. £250.

St. Thomas's Hospital Clinical Medical Unit.—Sen. Asst. and Jun. Asst. £600 and £450 respectively.

Seamen's Hospital Society, Dreadnought Hospital, Greenwich.—P. Also Anæsth. 50 gs.

Sheffield City.—M.O.H. £1100.

Sheffield Royal Hospital.—Asst. Cas. O. £150.

South Eastern Hospital for Children, Sydenham, S.E.—Res. M.O. £50.

Southport General Infirmary.—Jun. H.S. £175.

South Shields, Ingham Infirmary and South Shields and Westoe Dispensary.—H.S. £175.

Sunderland Royal Infirmary.—Sen. H.S. and H.P. £250 and £200 respectively.

Warrington Infirmary and Dispensary.—Jun. H.S. £200.

West London Hospital, Hammersmith-road, W.—P. Also Hon. Obstetric Registrar.

Westminster City Union, 369, Fulham-road, S.W.—Second Asst. M.O. £300.

Weston-super-Mare Hospital.—H.S. £180.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ripley and at Marple.

Births, Marriages, and Deaths.

BIRTHS.

BROADBENT.—On Dec. 11th, at Stanley Lodge, St. Albans, to Dr. and Mrs. Broadbent—a daughter.

CHODAK GREGORY.—On Monday, Dec. 6th, to Henry Alexis Chodak Gregory, M.C., M.B., Ch.B., M.R.C.S., L.R.C.P., and Hazel Haward Chodak Gregory, M.D., M.R.C.P., of 16, Gordon Mansions, W.C. 1—a son.

GLOVER.—On Dec. 10th, at Welford, Rugby, the wife of Norman Glover, M.B., of a son.

LEVICK.—On Dec. 8th, at de Walden Court, New Cavendish-street, W., the wife of Surgeon-Commander G. Murray Levick, R.N., of a son.

MACLEAN.—On Dec. 13th, at Nelson-place, Newcastle, Staffs, the wife of Bruce Maclean, M.B., B.S., M.R.C.S., of a daughter.

MAWSON.—On Nov. 26th, at Carlton-crescent, Southampton, the wife of Owen David Baker Mawson, M.R.C.S., L.R.C.P., of twin daughters.

SCHURR.—On Dec. 9th, at 2, St. Peters-place, Brighton, the wife of C. G. Schurr, M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

BRADFIELD—BARNARD.—On Dec. 8th, at All Saints' Church Compton, Winchester, Major E. W. C. Bradfield, I.M.S., Madras, to Margaret, only daughter of Mr. and Mrs. H. A. Barnard, of Olton, Warwickshire.

FITZWILLIAMS—WAGNER.—On Nov. 23rd, at the Roman Catholic Church in Riga, Duncan Campbell Lloyd Fitzwilliams, C.M.G., M.D., Ch.M., to Francesca Wagner, M.B.E.

HARRIS—MANN.—On Dec. 8th, at S. Michael's Church, Swaton, Lincolnshire, Surgeon-Commander Noel Hugh Harris, R.N., of H.M.S. *Inconstant*, to Mary Harriett, eldest daughter of the Rev. R. H. Mann, Vicar of Swaton, and Mrs. Mann.

HOWELL—BATCHELOR.—On Dec. 8th, at St. Mary Abbot's, Major H. L. Howell, O.B.E., M.C., R.A.M.C., to Elsie Mary, younger daughter of the late F. J. Batchelor and Mrs. Batchelor, O.B.E., of 10, Cumberland House, Kensington-road, W.

DEATHS.

BARTON.—On Dec. 10th, suddenly, at "Hurlingham," Heathside-avenue, Woking, Dr. James Edward Barton, for 30 years medical superintendent Surrey County Asylum, Brookwood.

WHARRY.—On Dec. 13th, at a Nursing Home, Henry Gordon Wharry M.R.C.S., of Norfolk-street, Park-lane.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
MONDAY, Dec. 20th.—8 P.M., Cantor Lecture:—Mr. A. C. Chapman: Micro-organisms and Some of their Industrial Uses.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Dec. 20th.—2 P.M., Dr. A. Saunders: Visit to Medical Wards. Dr. G. Stewart: Medical Out-patients. Dr. Simson: Diseases of Women. Dr. Morton: X Ray Department.
TUESDAY.—10 A.M., Mr. Steadman: Dental Department. 2 P.M., Dr. Burnford: Medical Out-patients. Mr. T. Gray: Surgical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Mr. Addison: Skin Department.
WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Sinclair: Surgical Out-patients. Mr. Gibb: Eye Department.
THURSDAY.—2 P.M., Dr. G. Stewart: Medical Out-patients. Mr. Baldwin: Orthopædic Department. Mr. MacDonald: Surgical Out-patients. Mr. B. Harman: Eye Department.
FRIDAY.—10 A.M., Dr. McDougal: Electrical Department. Mr. D. Buxton: Dental Department. 2 P.M., Dr. Burnford: Medical Out-patients. Mr. Banks Davis: Diseases of the Throat, Nose, and Ear.
Daily:—10 A.M. Ward Visits. 2 P.M., In-patient, Out-patient Clinics.

Communications, Letters, &c., to the Editor have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Mr. A. J. Austin, Lond.
B.—Dr. G. A. H. Barton, Lond.; Mr. H. Barwell, Lond.; Dr. J. S. Bolton, Nottingham; British Dental Association, Lond., Dental Sec. of; Dr. Bidou, Paris.
C.—Cleveland Hospital Council, Cleveland, Ohio; Dr. H. P. Cholmeley, Forest Row; Dr. F. G. Crookshank, Lond.; Miss G. Cowlin, Bristol; Mr. W. Clark, Lond.; Sir Frank Colyer, Lond.; Dr. F. M. Neild, Crowborough; Mr. W. Cullen, Lond.; City of London Wood-Wool Co.; Dr. G. H. Clark, Glasgow; Dr. C. Coombs, Bristol; Children's Guild of Song and Dance, Lond.
D.—Mr. H. Dickinson, Lond.; Dr. D. Douglas, Lond.; Dr. V. Dickinson, Lond.; Mr. H. P. Dunn, Lond.; Dr. J. A. Davidson Lond.
E.—Ediswan, Lond.; Dr. F. H. Edwards, Lond.; Dr. W. Edgecombe, Harrogate.
F.—Prof. J. E. S. Frazer, Lond.; Dr. A. M. Fraser, Portsmouth; Mr. W. R. Fairbrother, Lond.
G.—Mr. H. Gardiner, Lond.; Dr. P. Gully, Leysin; Great Northern Central Hospital, Lond.; Prof. T. R. Glynn, Liverpool.
H.—Harveian Society, Lond.; Home Office, Lond.; Mr. T. C. Heath, Lond.; Major W. E. Home, R.A.M.C.; Mr. C. H. Huss, Cardiff; Dr. J. Haddon, Denholm; Mr. P. B. Hoeber, New York; Dr. F. Hernaman-Johnson, Lond.; Prof. F. G. Hopkins, Cambridge; Prof. A. J. Hall, Sheffield; Mr. J. T. Henderson, Pietermaritzburg; Surg.-Vice-Admiral Sir Robert Hill, R.N.
I.—Imperial Institute, Lond., Director of.
K.—Mr. W. Kewley, Lond.
L.—Dr. R. B. Low, Lond.; Mr. J. B. Lamb, Lond.; Livingstone College, Lond.
M.—Medical Women's Federation, Lond.; Medical Officers of Schools Association, Lond., Hon. Sec. of; Mr. F. H. McMechan, Avon Lake, Ohio; Ministry of Pensions, Lond.; Sir F. Mott, Lond.; Dr. J. Moore, Paris; Mr. W. Morris, Lond.; Medical Research Council, Lond.; Mr. D. Marston, Coalville; Prof. C. S. Myers, Lond.; Middlesex Hospital, Lond., Sec.-Supt. of; Dr. J. Morley, Manchester; Metropolitan Life Insurance Co., New York; Metropolitan Asylums Board, Lond., Clerk of; Dr. J. S. McDonagh, Lond.; Mr. E. W. Morris, Lond.; Dr. E. S. McSweeney, New York.
N.—National Safety Council, Chicago; Dr. J. T. C. Nash, Norwich; National Anæsthesia Research Society, Columbus, Ohio; National Council for Combating Venereal Diseases, Lond.
O.—Dr. R. A. O'Brien, Lond.; Dr. J. Owen, Liverpool; Dr. J. Oliver, Lond.
P.—Dr. S. Phillips, Lond.
R.—Dr. B. Rasck, Christiania; Rontgen Society, Lond.; Dr. J. D. Rolleston, Lond.; Sir L. Rogers, Cambridge; Royal Institute of Public Health, Lond., Sec. of; Royal Society of Arts, Lond.; Royal Statistical Society, Lond.; Dr. W. Robertson, Mossel Bay; Dr. F. Romer, Lond.; Dr. B. A. Richmond, Lond.; Dr. J. W. Russell, Birmingham; Royal Faculty of Physicians and Surgeons, Glasgow; Royal Society, Lond.
S.—Dr. H. Stanley-Jones, Netley; School Medical Group of the Society of Medical Officers of Health, Lond.; Mr. S. H. Stewart, Whiteabbey; Dr. H. Sainsbury, Lond.; Dr. J. Sorley, Lond.; Prof. W. Stirling, Manchester; Société des Sciences Médicales et Biologiques, Montpellier; Society of Industrial Engineers, Chicago.
T.—Dr. A. O. Trotter, Lond.
U.—University College Hospital, Lond., Sec. of.
V.—Dr. H. W. Verdon, Brighton.
W.—Dr. W. B. Watson, Harrogate; Dr. E. Watson-Williams, Bristol; Dr. F. J. Waldo, Lond.; Dr. A. Warner, Leicester; Prof. G. S. Woodhead, Cambridge; Dr. G. S. Wilson, Lond.; Sir W. I. de C. Wheeler, Dublin; Dr. S. I. Welsh, Lond.; Mr. C. Wray, Lond.
Y.—Dr. H. Yellowlees, Edinburgh.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

Notes, Short Comments, and Answers to Correspondents.

CLINICS FOR INEBRIATES.[1]

BY JAMES A. DAVIDSON, M.D. ABERD.

CLINICS or bureaux where alcoholics can be treated as out-patients are well-known abroad, but up to now no such clinic has been opened in this country. I believe that there is a stage in certain types of alcoholics where such treatment is indicated and has a very fair chance of benefiting the patient. At The Hague Conference in 1911 Dr. Mendelssohn, the head of no less than seven bureaux in Petrograd, claimed remarkable results. Professor Kraepelin, of Heidelberg, reported that good work was being done in Germany, where 70 such institutions were working prior to the war. The reports of the clinic in Toronto were most interesting; since Canada went "dry" the clinic has been closed. The explanation of the success of these clinics appears to be that the inebriate comes comparatively early. He can consult the medical officer privately. His people need not know. The expense is not great and he can, as a rule, carry on with his work. Thus the patient is reached when in a fitter condition than if treatment were more delayed, because, as pointed out in the interim report of the Scientific Advisory Committee of the Central Control Board, "the habit of excess once formed tends to become stronger through the enfeeblement of the will which results from the drug's continued action upon the nervous system and which lessens the power to resist." The earlier the case is treated the better the results obtained.

Formation of an English Committee.

Just before the war—in 1912—some of those interested in this treatment began to realise what might be done in this country. Mr. Theodore Neild had attended The Hague Congress referred to above, and had been in direct touch with the workers in Holland, Russia, Germany, and Canada; it was through his efforts that a committee was formed with the object of starting such a clinic here. In 1914, when the Inebriates Act was before Parliament, it approached the Home Office authorities, who received the suggestion sympathetically and promised that the "guardianship clauses" would be drawn up so that it would be possible for such a clinic to act in the capacity of a "guardian" and that patients could be sent there for a period of treatment while on probation. The war broke out and the Bill was shelved; it is now understood to be "dead." But the idea was not lost sight of, and in 1918, in the fourth annual report of the Board of Control, special attention was drawn to the following causes of insanity "which might rightly be classed as largely preventable—namely, alcohol, syphilis, and mental stress," and hoped that "no effort should be spared to deal with these preventable causes and to provide means for effectual treatment in the early stages."

Recommencement of Work in 1919.

The work of Mr. Neild's committee was necessarily at a standstill during the war, but recommenced in 1919, when the committee felt that alcoholism could not easily be treated per se—that inebriety was so complex in origin that cause and effect were so indistinguishable, as, for example, in feeble-mindedness, epilepsy, and syphilis, that inebriety could not be tackled alone. Therefore a round table conference was held at which representatives of the following bodies were present: National Temperance League, Penal Reform League, Friends' Temperance Union, Inebriates' Reform and After-care Association, Eugenic Education Society, National Society for Epileptics, Central Association for Care of Mental Deficients, National Association for Care of Feebleminded, National Society for Combating Venereal Disease, Society for Study of Inebriety.

It was agreed that further legislative power was necessary, and that particulars as to what the various bodies were doing should be collected with a view to coöperation. Considerable interest was shown in the suggestion of a clinic, and it was pretty clearly demonstrated that inebriety was only one of a group of symptoms that would require treatment. It was pointed out that the demand for the granting of a guardianship or internment might be conceded on the report of duly appointed specialists to the responsible members of the family of a weak-minded inebriate, or to a clinic acting in the capacity of a guardian. The grounds for such a demand, beyond ordinary offences against the law, should be that the man is a source of danger to his family or to others, and

[1] Being the substance of a paper recently read before the Society for the Study of Inebriety.

that he is injuring, or is likely to injure, the welfare of a dependent through his intemperate habits.

Desirability and Objects of a Clinic.

Along similar lines an excellent scheme has been put in operation in Birmingham through the enthusiasm of the deputy chairman of the justices. To quote from an extract of the report of their general purposes committee, "they had for a long time been impressed by the futility and inadequacy of the customary methods of dealing with persons charged with crimes (including alcoholism), particularly as to the absence of any consideration of the mental condition of such persons." They therefore appointed a medical practitioner with whom the justices could confer, and suggested the establishment of a clinic for voluntary treatment, to which cases on remand in custody or remand on bail could be referred. In January, 1919, THE LANCET referred to this in a leading article,[2] saying that "these proposals should find general acceptance as indicating the principles to be kept in view in reforming our present methods of dealing with mental weakness which leads to anti-social conduct." Such a clinic must have at its head a doctor, expert, tactful, of strong character, and willing to conduct research. Its objects will be threefold: (1) Classification from the point of view of causation and treatment. (2) Acceptance of the responsibility of guardianship. The patient may be voluntary or may be referred to the clinic by the justices, presenting himself at fixed intervals for observation and treatment. (3) Treatment would be prescribed or carried out by the medical staff, who could go carefully into the personal and family history of the case and would examine the physical and mental condition. The assistance of a surgeon, dentist, oculist, or aurist, might be required and result in the removal of the exciting cause. In other cases advice to the patient, his family, or employer, may be all that is necessary. In more severe and chronic cases active medical treatment with drugs or the services of a psychotherapist may be useful. Not the least important of the doctor's duties will be the reference of cases found unsuitable for ambulatory treatment to a suitable institution, that every effort may be made by removal of temptation, strengthening of the will, and building up of the body prior to the patient's return to the normal conditions of life. Others will have to be referred back to the police to be dealt with, and others again to asylums. To a great extent the Tavistock Clinic lately opened in Tavistock-square, London, by Dr. Crichton Miller and others, answers these requirements. Here the patient's heredity, history, and present condition are carefully inquired into, and treatment is recommended or carried out according to the nature of the case. The patient attends without publicity and at little or no expense; while carrying on his ordinary duties he has the sympathy and advice denied him in the past. Treatment is not limited to inebriety, but is carried out in any suitable psychopathic condition. Those responsible for this great step forward surely deserve the enthusiastic support of all who are interested in the study of inebriety.

EVOLUTION AND THE FUTURE OF THE HUMAN RACE.

AT a meeting of the Eugenics Education Society held at 23, Russell-square, London, on Dec. 14th Professor Arthur Dendy, F.R.S., delivered a lecture on the above subject, Major Leonard Darwin presiding.

Professor Dendy said that the present well-being and future progress, not only of the individual but of the human race in general, must depend largely upon the extent to which the laws of nature were understood and the use which was made of our knowledge of them. He believed that there was evidence of progress, but if it was to continue and we wished to avert, or even postpone, the fate to which civilisation seemed to be doomed, we had got to change our ideals and cultivate a much truer sense of values. If progress consisted merely in covering the face of the earth with railways and factories, and in destroying the peace of God with motor-cars and aeroplanes, it would seem hardly worth while to go on, and many of us might come to prefer a life of solitary contemplation in the wilderness to the society of our too-energetic fellow-men. The question was: Could we profit by the experience of the past? Could we use our knowledge to avert the inevitable setback?—assuming, of course, that it was desirable to do so.

The Need for Education.

The past history of the whole organic world taught us that success depended upon adaptation to environment, but if the adaptation of any particular race became so specialised as to result in loss of plasticity, or in other words, if the race became dependent upon the continuance of conditions over which it had no lasting control, then, when those conditions changed, the race was doomed and an opportunity given to some less specialised and of a more plastic type to take up the running on new lines and gather fresh supplies of energy in its own way to repeat the cycle. It was not, however, only the exhaustion of our own reserves of energy and the changed conditions of life which followed that we had to fear. We had to ask ourselves whether the accumulation of capital might not be carried too far, tempting us to expend our strength in self-preservation. A man's fortune might prove a blessing or a curse to him according to the manner in which he made use of it. To the eternal question, What can we do to be saved? there was only one answer in this connexion. Educate ourselves. The most necessary items of our equipment would be physical and mental health. If we could secure them it was hardly too much to say that all else would be added to us. The improvement of national physique and the promotion of national sanity were objects worthy of all attention. Fortunately the national conscience was being awakened to the necessity of improving the conditions of life for the great mass of the people, and the question of housing had at last passed the stage of discussion and had entered upon that of action. The health of the children, the conditions of labour, and the recreation of the workers were at length receiving the attention which they ought to have received long ago. More important still, we were beginning to realise the responsibility that rested upon us for the health of future generations. The knowledge that had been gained by patient biological research during the past 50 years seemed likely to bear fruit abundantly in the near future. But teachers could only point the way. The human race would not be driven to salvation. We could only educate. Public opinion was more powerful than legislation, and if legislation in certain respects proved to be desirable it could come only as the result of conviction.

The Work of the Politician.

The evolution of every form of civilisation tended to bring with it disharmonies, and to forestall or reconcile these should be the task of the politician, but, unfortunately, he was often actuated by far different motives. But if he were not he was usually much too ignorant of the laws of nature to play the part of a successful physician. The study of biology, another name for the study of life, was perhaps the part of education which could help us most. Taking as an example the law of work Professor Dendy said that if instead of endeavouring to escape from it we once realised that work and life were the same thing we might get on much better in a world of toil. Every organism, consciously or unconsciously, worked for its living, and the moment it ceased to do so it died. But we had to see that the work was of the right kind and compatible with a reasonable amount of enjoyment. If mankind could be persuaded that love, truth, and beauty were stakes better worth playing for than motor-cars, cinematographs, and social distinctions, there need be little fear of disharmonies in the social organism. Education alone could do it. At present education had only gone far enough with the great masses of the people to make them question the foundations of the religious beliefs and moral codes by which society had hitherto been held together. They were beginning to exercise their own judgment and to reject cant and hypocrisy of every description. The people would no longer be driven by authority, but had to be led by sympathetic intelligence. He believed that science and education would come to the rescue and enable us to inaugurate a new era of rational progress. The welfare of individual members was inextricably bound up with the community as a whole, and if any section suffered all other sections would sooner or later be affected.

The Need of the Future.

The welfare of the community depended upon the wise choice of leaders, and in a democratic State, if the people were not educated, the leaders would not be chosen wisely. Leaders were required of a type very different from those who held the reins of government or sat in Parliament. We required leaders who had qualified themselves for the great work of education and who realised that the welfare of mankind depended more upon the pursuit of truth, love, and beauty than upon the extension of commerce and the pursuit of material wealth. In conclusion, he said that the great principle of evolution, whether as regarded the individual or the race, consisted in sacrifice and rebirth at more or less frequent intervals—sacrifice of all those accretions which had become effete or developed beyond the limits of usefulness, and rebirth by making a fresh start with a clean sheet.

RIVAL SOLUTIONS OF THE RAT PROBLEM.

AT a recent congress of the Royal Sanitary Institute Mr. George Jennison, of the Belle Vue Zoological Gardens, Manchester, called attention to the Rodier plan for the extermination of rats by sexual selection, and drew an interesting comparison between results thereby obtained and results of the wholly destructive method in force under the Danish Rat Law at Copenhagen. The power of multiplication of the rat is due to two factors—one, the protection

[2] THE LANCET, 1919, i., p. 143.

afforded by man's building, and the other the fecundity of the animal itself. The first factor cannot be avoided; the second may, in Mr. Jennison's opinion, be overcome. The rate of breeding and the proportion of males to females in a litter are still matters of dispute, but the enormous damage inflicted by rats, both by destruction of foodstuffs and by spread of disease, is beyond all question. The method of combating the pest advocated by Mr. W. Rodier, of Melbourne, Australia, is to trap the animals alive, kill all females, and release all males, with the intention of making the remaining females polyandrous. The prevailing polygamy of rats gives the females leisure to bring up their young; the normal result of polygamy is a considerable preponderance of female births over male, and the practice of poisoning and shooting rats tends to destroy chiefly males, thereby increasing the discrepancy of numbers. By releasing the males and by discontinuing indiscriminate methods of slaughter, rats will be driven to commit race suicide. The males will worry the females, hamper their rearing of young, and even kill the latter. By means of this system Rodier claims absolutely to have cleared an area of 64,000 acres of rabbit-infested land in Australia. The idea was first suggested to Mr. Jennison by a gamekeeper, who had proved the converse; to replenish a depleted rabbit-warren he found it best to kill every male that came to hand. When the Rodier system came to Mr. Jennison's notice in 1915 he determined to try it upon rats at Belle Vue Zoological Gardens, where for 40 years a large and efficient room-trap had been employed, and all trapped animals killed. In less than five years the Belle Vue rats have been reduced by one half their number. To avoid a second counting of previously-trapped males a portion of the tails of the latter was removed before they were set at liberty. The results recorded at Copenhagen, where obtains what is probably the most efficient system of rat-killing in the world, show that the maximum effect was gained in the first 15 months; after that the figures only fluctuated slightly for seven years, and the war-time food shortage only assisted further reduction to the extent of one-third. Guided by his own experience, Mr. Jennison considers the best plan of campaign is now clear. When rats are very numerous apply 12 months of indiscriminate slaughter to bring the problem within workable limits, and then employ the Rodier system. The great merit of the latter is that constant vigilance is no longer required once an area is well in hand; its defect is the difficulty of execution. Rat-poisoning and rat-killing as a sport must cease; the former, indeed, is responsible for the destruction of much harmless animal life. With regard to the latter, a careful man might be allowed to shoot rats carrying food, as only the does perform that duty.

A brief reference to the Rodier system is included in Sergeant-Major E. B. Dewberry's recently published monograph[1] on rat prevention and destruction, which is, however, mainly devoted to the perfected methods of indiscriminate slaughter. The protection of food by wire netting and wire-gauze safes, removal and destruction of refuse, filling up of rat holes, and the rendering rat-proof of buildings and drains, are dealt with as preventive measures; in the matter of destruction emphasis is laid upon the inefficacy of any single method and the necessity for combined and simultaneous action over a wide area. Fullest protection is advised for the rats' natural enemies—owls, buzzards, kestrels, sparrow-hawks, rooks, crows, gulls, herons, weasels, stoats, and foxes. The mongoose is also valuable, but there is now some difficulty in its importation from India. Various poisons, the methods of their administration, the uses of fumigation, traps, and hunting are carefully discussed, and in conclusion Sergeant-Major Dewberry points out that the number of diseases found to be disseminated by rats increases as biological and medical studies proceed.

[1] The Prevention and Destruction of Rats. By Elliot B. Dewberry, Sergeant-Major, R.A.M.C. 1920. London: John Bale, Sons, and Danielsson, Ltd. 2s.

PUBLIC HEALTH IN GRENADA.

ACCORDING to the Blue-book for 1919 the estimated population is 74,490. The birth-rate for the year was 33·17 per 1000 and the death-rate 17·9. The principal causes of death were diarrhœa and enteritis (270), malaria (88), syphilis (38), premature birth and diseases of early infancy (61), pulmonary tuberculosis (64), and dysentery (77). There are three ordinary hospitals in the colony, the central institution being in St. George's, with accommodation for 140 patients. District hospitals are provided in St. Andrew's (12 beds) and in Carriacou (24 beds). Two other hospitals are situated in St. George's, one for yaws patients, with accommodation for 70, and the other a consumptive hospital with 20 beds. The latter institution is pleasantly situated at Richmond Hill at an elevation of about 600 feet above sea-level. Government dispensaries are now established in every parish and in Carriacou. A considerable sum is expended on free medicines, principally for the relief of venereal diseases and yaws. A Government medical service, comprising a colonial surgeon, a resident surgeon for the hospital in St. George's, and 11 district medical officers, is maintained by Government. Medical attendance is given free to paupers and at reduced rates to labourers under an approved scale of charges.

Venereal Disease and Yaws.

Two special campaigns against venereal disease and yaws respectively have been giving satisfactory results. The colonial surgeon reports that the beneficial results achieved by the intensive treatment of yaws by injection of novarsenobillon in the districts have been most remarkable and beyond the most optimistic anticipations. Patients, recognising the obvious good of the treatment, come readily to the medical officers for treatment. In the period from May to the end of the year 5000 cases were injected with novarsenobillon and 808 were discharged as cured. The medical officers have evinced the greatest keenness in this work, which they have performed in the most efficient manner, and one of the results, in the opinion of the colonial surgeons, of such extensive and sustained efforts to eradicate this loathsome disease will be the possibility of closing the Yaws Hospital within a short time and its utilisation for some other purpose. The campaign instituted in 1918 against venereal diseases is being steadily proceeded with and a great deal of conscientious work is being performed by the medical staff, with gratifying results to the patients concerned and the community in general.

Ankylostomiasis.

The campaign against ankylostomiasis which was discontinued in November, 1916, has not been started again, but will be resumed by the International Health Board as soon as the colony can give a certificate that the areas to be operated on have been previously brought to a sufficient standard of sanitary efficiency. This disease is still prevalent throughout the colony. Special attention is being given to improvement of general sanitation, both in respect of the special areas which are intended to be operated under the ankylostomiasis campaign, and in the colony generally. Several sites for the erection of public latrines have been decided upon in the districts selected for operations under the International Health Board.

The rainfall, which in 1919 was 73·09 inches, varies greatly, ranging from less than 20 inches in the extreme south to about 200 inches in the mountainous region of the interior. Cultivation prospers best in the regions with a rainfall of between 60 and 120 inches annually. The fact that it is matter for special meteorological record whenever the thermometer in the shade reaches 90° or falls below 70° F. is worthy of note, as indicating a certain degree of equability in the climate. As a general rule, climatic conditions during the continuance of the trade winds, which prevail from December to June, may be said to be healthy and pleasant. The remaining months, owing to humidity and cessation of the breezes, are relaxing and enervating.

HAIR RESTORATION BY THE USE OF SPECIAL FOODSTUFFS.

THE numerous fraternity who prescribe for the common complaint of baldness usually depend on the various remedies applied locally, or they make use of so-called strengthening remedies given internally—such as arsenic or iron. N. Zuntz, the distinguished chemical physiologist of Berlin, takes a wider and, perhaps, more philosophic view as to the conditions likely to influence the growth of hair or wool. He recalls the fact that in the early decades of the nineteenth century the question was raised as to whether the woolly coat of sheep could be improved by the nature of the diet. Proceeding on the supposition that given an increased supply to the hair papillæ of the proximate organic material out of which is manufactured keratin—the organic basis of certain epidermic appendages—it might be possible to influence favourably the growth of wool and hair.

There are several varieties of the scleroprotein keratin, but they are all characterised by their large and loosely-combined sulphur in the form of cystin, and in this and other respects are easily distinguished from other proteins and even scleroproteins. They are indigestible, but may be hydrolysed, and the hydrolysed products so far as energy is concerned if added to a dietary may replace about 10 per cent. nutritive nitrogen, much after the manner of gelatin in a dietary. A. Loewy[1] records the results on four sheep and a man when these hydrolysed products were added to the daily dietary. Two of the sheep received daily in addition to their usual food 10–15 g. of these keratin derivatives. As a result the wool fibres became more firm, their cross section increased from 6·92 to 8·15μ, and the length was increased somewhat. In man—Zuntz himself—before the experiment the daily growth of new hair—head and beard—was calculated as 5 mg. With the daily addition of 1–1·5 g. of the hydrolysed products to the dietary, in the first four weeks the amount was 6·3, and in the subsequent

[1] Allg. med. Zentral. Zeitung, No. 26, 1920.

four 9·22 mg. Even after the withdrawal of the keratin products the increase in the growth of the hair continued for several months. Naturally in a country of such inventive chemical activity and "ersätze," little time was lost in the practical application of the discovery. The hydrolysed products were put on the market under the name of "Humagsolan," and so "Humagsolan-therapie" was introduced. But obviously even this incentive to growth is not applicable to all cases of loss of hair or baldness, as pointed out by Blaschko.[2] If the hair papillæ are atrophied—the ground, as it were, wanting—no favourable result is to be expected, and it must be remembered that in cases of acute and rapid loss of hair there are some cases of spontaneous recovery. Blaschko came to the conclusion that the best cases for study are those where loss of hair is due to chronic seborrhœa, and that humagsolan is actively beneficial in such cases. It is also beneficial in trichorrhexis, and it was effective in one case of old atrophic disease of the nails. It will rest with the dermatologists to test the possibilities as a therapeutic keratin-stimulating and growth-furthering agent of this latest product of German organic therapeutism.

THE SEGREGATION OF EPILEPTIC CHILDREN.

AT the annual meeting of the supporters of the David Lewis Manchester Epileptic Colony, situated at Warford, it was stated that great advantage would be gained if every child, rich or poor, who had reached school age, were placed in an epileptic school on the first appearance of epilepsy. A very large number of the children who went to Warford at the beginning of their illness ceased to have epileptic attacks and were now self-supporting. Moreover, the increase in well-being and the contentment seen in the patients after they had entered the colony confirmed the opinion that people who had epilepsy usually thrived best when they were assembled in colonies. At home they were somewhat abnormal; in a colony they were the normal members of their society. A legacy to the institution of £10,312—and perhaps a few thousands more—by the late Alderman Royle was announced. The year's working resulted in a loss of £142, and before the above-named legacy was received the bank overdraft amounted to £4438. The fees had been considerably raised and the committee expressed the hope that they would be able to meet expenditure completely in the future.

VACCINE TREATMENT OF EQUINE LEUCORRHŒA.

WE have received a communication from Dr. T. S. Reeves and Mr. W. R. Scott, F.R.C.V.S., relating to a case of leucorrhœa in a mare, the property of Dr. Reeves. The mare was a valuable thoroughbred, out of a half-sister of Craganour, and granddaughter of Veneration. She had had three foals, but was barren during 1919 and the winter of 1919–20, losing a good deal of flesh; the skin was tight and the coat had lost all its gloss. The general condition being very bad and looked upon as hopeless, the owner was advised to remove her from the stud. For more than two years an intermittent uterine discharge had gone on, in spite of vigorous general and local treatment, tonic and ecbolic medicines and astringent antiseptic douches being freely employed. Upon the opening of the labia the cervix also appeared to open, and a large volume of flatus was expelled; air could be sucked in and forced out with ease, demonstrating the flaccid condition of the whole organ, which had lost all contractile power. The capacity of the uterus was enormous, and the hand could easily be passed through the os. The pus discharged was light grey in colour, thin in consistency, giving off a sickly smell, and lacking adhesiveness; its reaction was strongly acid. Upon bacteriological examination smears stained with carbo-gentian violet and Gram revealed the presence of numerous epithelial cells and leucocytes—many of them so disintegrated as to be almost past recognition—staphylococci, streptococci (short forms), and a Gram-negative bacillus afterwards found to belong to the *B. coli* group. All these organisms grew vigorously, and from them a vaccine was made. A course of six ampoules was prepared; the doses, injected every six days in the region of the neck, were graduated as follows (in thousand millions: *Streptococcus brevis*, 1, 1·25, 1·5, 1·75, 2, 3; *Staphylococcus albus*, 1·25, 1·5, 2, 3, 4, 6; *Bacillus coli*, 1, 1·5, 2, 3, 4, 5. No apparent reaction followed the first injection; after the second and third there were strong negative phases, with rise of temperature and loss of appetite. The discharge remained unaltered after the second injection, but became thicker, more cream-like, and very profuse after the third. The fourth was followed by a slight negative phase, with very little constitutional disturbance; the condition was much improved, and the discharge lessened to one half-pint of viscid matter in 12 hours. The appetite was good, gloss reappeared on the coat, and there was no discharge of flatus from the uterus. After the fifth injection there was no negative phase and no discharge, and after the sixth the patient was quite normal in every way. Recovery appears to be complete; for six months no uterine discharge has been noted, and the animal looks very fit. The writers wish to place the case on record as an example of the high specificity of vaccine therapy, adding that their experience of such cases in pre-vaccine days was most discouraging. They conclude that the extensive surface of the uterus facilitated the effort of nature towards recovery, the abnormal network of blood-vessels permitting large quantities of artificially stimulated humoral and cellular elements to reach the infective foci and hasten their destruction.

[2] Deutsch. Med. Wochenschrift, No. 19, 1920.

AN APPRENTICE IN CRIME.

PSYCHIATRISTS have long recognised the tendency among mental deficients towards criminality. It appears that this tendency is now being discovered and exploited by the criminal classes themselves. At a recent meeting of the Société Clinique de Médecine Mentale Drs. Marcel Briand and Borel presented a boy, aged 14, who had on many occasions been used as a tool of a professional thief. It is clear that if this practice is at all widespread two mentally deficient children without criminal tendencies in the first place may very soon acquire them. These children incapable of moral judgment as they often are, should be specially protected by society, which in defending them will at the same time be protecting its own interests.

ON THE DANGERS OF THE STREETS.

IN Paris, the cross-way where the Grands Boulevards are cut at right angles by the great highway leading to Montmartre is known to Parisians as the "Carrefour des écrases" on account of the large number of fatal accidents to foot passengers attempting to cross the streets at this spot. The accidents are largely due to the reckless and careless driving of the almost incessant cross streams of vehicular traffic in this congested area, and may also be partly due to the increase of deafness following on the war. The issue of armlets, yellow with three black spots, to the deaf, so that drivers may be warned to exercise special care, is being tried in Germany. According to the *Times* Paris correspondent it is estimated that the police records already contain notifications of more than 50,000 accidents for 1920, as against 47,856 last year and 35,630 the year before. Last year there were 99 fatal and 13,618 non-fatal accidents through street collisions in France, as against 82 and 11,828 the year before. London on the one hand and Manchester on the other seem to be emulating Paris in the number of accidents—fatal and non-fatal and most of them avoidable—as one of the results of the increase of motor-propelled vehicles of all kinds. Mr. Justice Darling the other day sentenced a taxi-cab driver to 12 months' hard labour for the manslaughter of a foot passenger by knocking him down with a taxi-cab, the judge remarking that "there are numbers of people driving taxi-cabs and motor-cars who are very careless of foot passengers, whether they are crossing the road or getting into tramway-cars. Persons who will kill people by reckless driving and are arrested by the police cannot expect to have the matter treated as a venial offence." The following table shows the number of accidents in Manchester in recent years:—

Street Accidents in Manchester.

Year.	Fatal.	Non-fatal.	Year.	Fatal.	Non-fatal.
1911	31	1168	1916	47	902
1912	36	1096	1917	48	759
1913	44	1027	1918	36	612
1914	43	1154	1919	51	897
1915	53	1132			

Should the present monthly average of 1920 be maintained until the end of the year, the total accidents for 1920 will be close on 80 fatal and 984 non-fatal. It will be observed that the proportion of fatal to non-fatal accidents is on the increase, and it is stated that most of these accidents occur within the congested street area of motor traffic—the vehicles being mechanically propelled. A noteworthy fact is that accidents rarely occur where traffic is regulated by a policeman on point duty, and we understand that Paris is now making attempts, not yet effectual, to provide a substitute for his good-humoured control in the form of an "agent" armed with a white baton but apparently not with his power of compelling obedience.

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